Forty Years

of Earth Observations...
Understanding a Changing World

PECORA18

18th William T. Pecora Memorial Remote Sensing Symposium

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National Aeronautics and Space Administration (NASA)

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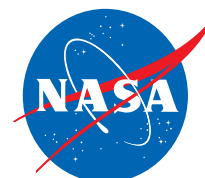
Final Program
November 14-17
2011

Hilton Washington Dulles Hotel
Herndon, Virginia

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Pecora 18 Steering Committee

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Tom Holm, Chair, *U.S. Geological Survey*
Leslie Armstrong, *U.S. Geological Survey*
Larry Pettinger, *U.S. Geological Survey* (retired)
Tom Loveland, *U.S. Geological Survey*
Jennifer Rover, *U.S. Geological Survey*
Mike Wulder, *Canadian Forest Service*
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William Stoney, *Mitretek*
Darrel Williams, *Global Science and Tech.*
John Lyon, *Bureau of Land Management*

Pecora 18

As Steering Committee Chair of the 18th William T. Pecora Memorial Remote Sensing Symposium, I am delighted to have this opportunity to welcome you to Herndon, Virginia for this exciting technical program. This 18th edition of the Pecora Symposium includes five 90-minute plenary sessions, collectively spanning the conference theme – Forty Years of Earth Observation.

The conference will open with *Achieving William Pecora's Vision*. This plenary session reflects on William Pecora's vision for Earth Observation and includes the status of efforts to continue the vision with presentations by Secretary of the Interior Kenneth Salazar (invited), NASA Director of the Earth Science Division Michael Freilich, DOI Assistant Secretary for Water and Science Anne Castle, and Senator John Thune, South Dakota (invited). The Tuesday afternoon plenary will be *Highlights from the Past Four Decades*. This session involves speakers and panelists who will reflect on the science highlights, surprises, key achievements, and challenges associated with 40 years of Earth Observation. Wednesday's plenary sessions will be *Science and Applications in an Era of Free Landsat Data* and *Mapping and Monitoring the Globe*. The first session will introduce the science and applications revolution resulting from the changes in the Landsat Data Policy and will include evidence of the global impact of the decision. The second session will cover the 40-year Landsat legacy; focusing on free access to at least 2.5 million Landsat scenes which span the globe since 1972 and which are creating new opportunities for understanding global change and the condition of the planet. The closing session on Thursday will focus on *The Next Forty Years*, drawing attention to the possibilities ahead in Earth Observation.

Through the leadership and commitment of the U.S. Geological Survey (USGS), the National Aeronautics and Space Administration (NASA) and all the Symposium sponsors, especially the Technical Program Committee Chairs – Tom Loveland and Mike Wulder, we have compiled an outstanding program for your benefit. The Symposium clearly continues the Pecora tradition of focusing on the applications of satellite and other remotely-sensed data to study, monitor, and manage the Earth's land surface, as well as technologies to improve satellite data analyses, quality, access, and preservation.

Accompanying the plenary sessions are 30 technical sessions with accepted and invited papers, a poster session, exhibit hall, and social and networking events to keep you busy for the duration of the Symposium. This combination of activities at Pecora 18 comprises a unique opportunity for you to share experiences, successes, and ideas.

Thomas M. Holm
Steering Committee Chair
Pecora 18 Symposium
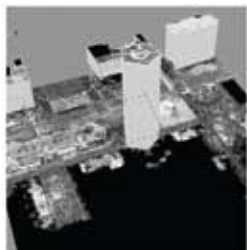
The world around us is not flat. You often need a solution that allows you to get information from more than just two dimensional imagery and data. Introducing E3De™, an interactive geospatial software environment that allows you to extract important situational awareness from three dimensional data – providing you with more information about an area of interest than ever before. E3De has advanced tools to utilize raw LiDAR point cloud data and create photorealistic 3D visualizations, extract 3D features from a scene, or produce 3D products and layers. Derived results can be included in your GIS, fused with 2D data for further analysis, and more. When you analyze the world in all three dimensions, you discover the full potential of your data and can make better, more informed decisions. Learn more at **www.ittvis.com/E3De.**

E3De. Discover the Next Dimension of Your Data.

▶ **See how to extract 3D features from LiDAR data with E3De.**
Booth 205 at the 2011 ASPRS Pecora Symposium in Herndon, Virginia.

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Conference-at-a-Glance

	6 AM	7 AM	8 AM	9 AM	10 AM	11 AM	Noon	1 PM	2 PM	3PM	4 PM	5 PM	6 PM	7 PM
Sunday, November 13th														
Registration Hours						██	██	██	██	██	██	██	██	██
ASPRS Committee Meetings				██	██	██	██	██	██	██	██	██		
Workshops							██	██	██	██	██	██		
Monday, November 14th														
Registration Hours		██	██	██	██	██	██	██	██	██	██			
ASPRS Committee Meetings			██	██	██	██	██	██	██	██	██	██	██	
Workshops			██	██	██	██	██	██	██	██	██	██		
Classified Session		██	██	██	██	██	██	██	██	██	██	██		
Tuesday, November 15th														
Registration Hours	██	██	██	██	██	██	██	██	██	██	██	██		
Exhibit Hall Hours					██	██	██	██	██	██	██	██	██	
Opening General Session 1			██	██										
General Session 2								██	██					
Technical Sessions				██	██					██	██			
Exhibitors' Reception												██	██	
Poster Sessions*												██	██	
Wednesday, November 16th														
Registration Hours		██	██	██	██	██	██	██	██	██	██	██		
Exhibit Hall Hours					██	██	██	██	██	██	██	██		
General Session 3			██	██										
General Session 4								██	██					
Technical Sessions				██	██					██	██			
Thursday, November 17th														
Registration Hours		██	██	██	██	██								
Closing General Session 5					██	██	██							
Technical Sessions			██	██										

* Posters will be on display Tuesday, November 15 to Thursday, November 17th. Poster Presenters will be available for discussion Tuesday, November 15th from 5:30 PM to 7:00 PM.

ASPRS Meeting Schedule...*Save the dates!!!*

**ASPRS 2012
Annual Conference**
Sacramento Convention Center
March 19 – 23, 2012
Sacramento Convention Center
Sacramento, California

**ASPRS/MAPPS
Fall Specialty Conference**
October 29 – November 1, 2012
Marriott Tampa Waterside Hotel, Tampa, Florida

ASPRS 2013 Annual Conference
March 24 – 28, 2013
Baltimore Marriott Waterfront Hotel
Baltimore, Maryland

ASPRS/CaGIS Fall Specialty Conference
October 27 – 31, 2013
Crowne Plaza Riverwalk, San Antonio, Texas

ASPRS 2014 Annual Conference
March 23 – 27, 2014
Galt House Hotel, Louisville, Kentucky

ASPRS 2015 Annual Conference
May 4 – 8, 2015
Tampa Bay Marriott Waterside Hotel
Tampa, Florida

Frequently Asked Questions

How do I get help in an Emergency?
Contact an ASPRS staff person or pick up any hotel house phone and ask for Security. Give all details of the emergency including the location.

Where is the Conference Registration Desk?
The Conference Registration Desk is located in the Belmont Ballroom Foyer at the entrance to the Exhibit Hall in the Hilton Washington Dulles Hotel.

What are the Conference Registration Desk Hours?

Sunday, November 13	11:00 am to 7:00 pm
Monday, November 14	7:00 am to 5:00 pm
Tuesday, November 15	6:30 am to 5:45 pm
Wednesday, November 16	7:00 am to 5:00 pm
Thursday, November 17	7:00 am to 11:00 am

Once the Conference Registration Desk is closed, materials will not be available until the following morning.

What are the Exhibit Hall Hours?

Tuesday, November 15	10:00 am to 7:00 pm
Wednesday, November 16	10:00 am to 5:00 pm

The Exhibit Hall is not open on Thursday, November 17th.

Are Workshops included with the registration fees?
No. Workshops require individual registration and a separate fee in addition to the general conference registration fees. Availability is based on space. We do not reserve spaces without full payment in advance and there is no waiting list. ASPRS reserves the right to cancel any workshop if the minimum number of registrations were not received by October 14, 2011. On-site registration is available for confirmed workshops with available space.

What should presenters do after they register?
All Technical Paper Presenters should check in at the ASPRS Registration Desk to pick-up their registration packets and initial the Master Final Program next to their name including either a hotel room number or cell phone number. A Master Final Program will be posted at the ASPRS Registration Desk so the session moderators can check if each presenter has arrived and can contact them if necessary.

Does ASPRS provide laptops for Technical Sessions?
No, ASPRS does not provide laptops or desktop computers for Presenters during Technical Sessions. All Presenters' must provide their own laptop computer.

What does ASPRS provided in each Technical Session room?
Each technical session room will be equipped with a LCD projector and screen. A microphone will be provided when necessary. ASPRS does NOT provide internet access, laser pointers, or laptop computers for the technical sessions.

Do Presenters have a Preparation Room?
Yes, the Executive Boardroom 1 has been reserved for presenters. The room will be available on a first come basis and should be used for rehearsal only.

Monday, November 14	8:00 am to 5:00 pm
Tuesday, November 15	8:00 am to 5:00 pm
Wednesday, November 16	8:00 am to 5:00 pm
Thursday, November 17	8:00 am to 11:00 am

This room will be equipped with an LCD projector and screen. All presenters must bring their own laptops for all presentations. We encourage presenters to review their materials prior to their presentation.

Do Moderators need to check-in?
Yes, as soon as you arrive, go to the ASPRS Registration Desk where a Master Final Program will be posted. Please initial and write your cell phone number or a hotel room number beside your name on this Master Program. We are asking the Presenters to do the same thing. This will be your way of knowing what presenters have arrived for your session and how to get ahold of everyone.

Prior to your session, check the Master Final Program at the ASPRS Registration Desk to confirm that all of your presenters have arrived at the conference.

What are Poster Presenters expected to do?
ASPRS provides to each Poster Presenter one side of a fabric covered poster board that measures three feet wide by eight feet high, and push pins. All Poster Presenters should plan to arrive between 7:30 am and 10 am on Tuesday, November 15 to affix their work to any available board. All posters must be removed by 12 noon on Thursday, November 17. All poster packaging must be removed from the poster area once posters are hung. ASPRS is not responsible for posters that are not removed. Poster Presenters must also check in at the ASPRS Registration Desk to pick-up their registration packets and initial the Master Final Program next to their name including either a hotel room number or cell phone number.

Please be near your poster during the Exhibitors' Reception on Tuesday, November 15 from 5:30 pm until 7:00 pm. This is a time for Symposium attendees to view your posters and ask you questions or gain further information about your research.

Is there an ASPRS staff office in the hotel?
Yes, the ASPRS staff office is located in the Colvin Run II room.

Where should Student Assistants and Volunteers report?
All Student Assistants and Volunteers should check in with the Coordinator in the Parlor 122 room at least 15 minutes before their scheduled session time.

Why do I need a badge?
You paid your registration fee and your badge is proof of it. For entrance to the General Sessions, plenary and technical sessions, and Exhibit hall, you need to wear your name badge.

What if I forget or lose my badge?
A charge of $5 will be made for replacement of lost badges.

Why do I need tickets for certain events?
Your tickets are proof of payment for certain events and must be presented at the collection point. Lost tickets will not be replaced.

How can I visit the Exhibit Hall if I am not registered for the conference?
Daily Exhibit Hall badges may be purchased at the ASPRS Registration Desk in the Hilton Washington Dulles Hotel. Everyone entering the Exhibit hall must have a name badge, including children over 13 years of age. Children under 13 years of age are not permitted in the Exhibit hall at any time due to insurance and safety regulations.

Will it be possible to post resumes and job openings?

Yes, posting boards are provided near the Exhibit hall for all resumes and job openings. Please bring multiple copies of all postings to allow interested parties to take one and check the board frequently for new materials.

How do I get a copy of the Proceedings?

Pecora 18 Conference Proceedings are available online only at www.asprs.org/Pecora18. Click on the link to the Proceedings in the left-hand column. To access the proceedings you will be required to give a Login and Password. This information will be available from the Conference Registration Desk on site at the conference. ASPRS Members may access the proceedings from our website with their user ID and password.

How can someone from outside the hotel contact me?

Messages cannot be personally delivered to Conference attendees due to the varied schedules of everyone in attendance. Messages can be left in the rooms of those staying at the Hilton Washington Dulles Hotel through the hotel telephone operator. Packages and fax messages can be sent to individuals staying at the hotel. There is a charge for all packages and faxes sent to hotel guests. This fee will NOT be paid by ASPRS. All packages should be addressed as follows:

Hilton Washington Dulles
13869 Park Center Road
Herndon, VA 20171
Attention: Bellman/porterage
Hold For: (enter Guests name and company)
Event Name: ASPRS Fall 2011
Event Start Date: November 15, 2011
Fax: (703) 478-9286

Is there a Lost and Found?

Please contact Hotel Security through the hotel house phones for all lost and found items.

Where can I store my bags/luggage?

Please contact the Hotel Bellman Desk for storage of your personal items. There may be a fee for this service. ASPRS is not responsible for your bags or luggage during the Symposium and will not hold bags/luggage.

Stay In Touch...

ASPRS is Tweeting at www.twitter.com/ASPRSorg.

We will use **#PECORA18** as the official hash tag for tweets about the Pecora 18 Symposium. Sign-up and follow us for the latest updates and information.

Follow us on Facebook at www.facebook.com/ASPRSorg.

Friend request ASPRS on Facebook today and catch all of the Society news, webinar information, conference details, and more.

Checkin on Foursquare!

Checkin at the Pecora 18 Symposium on Foursquare and find friends and colleagues. Network using this great social media tool.

Apps...

Download the Pecora 18 Symposium smartphone app. Get push notification on room changes, access the final program and more.

Students *&* Young Professionals

Please join the Student Advisory Council (SAC) for some activities designed just for YOU!

Student and Employer "Meet and Greet"

Monday, November 14, 5:45 PM to 6:15 PM
Room: Potomac Ballroom II

Get together with the other Students and Associate members of ASPRS attending this years' Symposium and learn what the SAC has been working on. Stay for the meet and greet and make some connections with potential Employers attending this year.

The SAC members would love to meet all students attending the Symposium and hear any ideas you may have to make your symposium experience enjoyable.
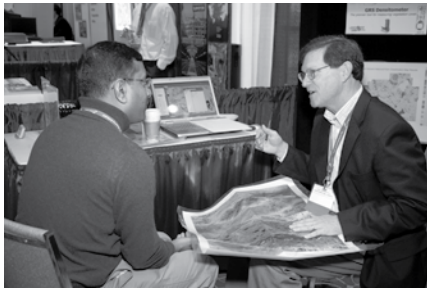
The meet and greet is designed to connect members looking to apply for jobs in the digital mapping industry with employers looking to hire. Bring your resume, a business card, or just a smile and a handshake, and expand your job network at the symposium.

Student Advisory Council Meeting

Monday, November 14, 6:15 PM to 6:45 PM
Room: Potomac Balltoom II

All Students attending the conference are welcome to come and participate in the Student Advisory Council Meeting. Meet the members of the Council and hear about the activities they have planned for this meeting and throughout the year.

Other Social Activities

Your SAC Networking Councilor will arrange relaxed social gatherings after each of the day's symposium activities. These events will allow you to get to know more of the students and young professional members of ASPRS. All student attendees are welcome to join in on the fun as well.

Information will be at the conference registration desk.

We guarantee that your participation in these activities will make your conference experience more enjoyable!

www.asprs.org/Pecora18

Sunday, November 13th

ASPRS Committee Meetings

Workshops

Division Directors
9:00 AM to 10:00 AM, Room: Chrysalis

Region Officers
9:00 AM to 10:00 AM, Room: Potomac Ballroom II

Committee Chairs
9:00 AM to 10:00 AM, Room: Potomac Ballroom III

Journal Policy & Publications (Joint Meeting)
10:00 AM to 12 Noon, Room: Potomac Ballroom II

Photogrammetric Applications Division (PAD)
10:00 AM to 11:00 AM, Room: Potomac Ballroom III

Geographic Information Systems Division (GISD)
10:00 AM to 11:30 AM, Room: Chrysalis

Data Preservation & Archives
11:00 AM to 12 Noon, Room: Potomac Ballroom III

Evaluation for Certification
1:00 PM to 2:00 PM, Room: Chrysalis

Convention Policy & Planning
1:00 PM to 3:00 PM, Room: Potomac Ballroom III

Primary Data Acquisition Division (PDAD)
1:00 PM to 2:00 PM, Room: Potomac Ballroom II

Electronic Communications
2:00 PM to 3:00 PM, Room: Chrysalis

Lidar Division
2:00 PM to 3:00 PM, Room: Potomac Ballroom II

Awards Committee
3:00 PM to 4:00 PM, Room: Chrysalis

Remote Sensing Applications Division (RSAD)
3:00 PM to 4:00 PM, Room: Potomac Ballroom III

By-Laws Committee
4:00 PM to 5:00 PM, Room: Chrysalis

Professional Practice Division (PPD)
4:00 PM to 5:00 PM, Room: Potomac Ballroom III

Education & Professional Development Committee
4:00 PM to 5:00 PM, Room: Potomac Ballroom II

Standards Committee
5:00 PM to 6:00 PM, Room: Potomac Ballroom III

Sustaining Members Council
5:00 PM to 6:00 PM, Room: Potomac Ballroom II

Division Directors
5:00 PM to 6:00 PM, Room: Chrysalis

WS 2
Remote Sensing of Wetlands

John Lyon, *Bureau of Land Management*
John Iiames, *U.S. Environmental Protection Agency*
12:15 PM to 4:45 PM, .4 CEU, Room: Mosby

INTRODUCTORY WORKSHOP

Identifying and characterizing wetlands can be greatly enhanced by the use of remote sensor and geospatial technologies. Basic im these approaches comes from their application over time and space, and leads one to an understanding of the influences of hydrology, soils, plants, and topography that occasion the presence of wetlands, and allows their remote detection.

These presentations show how technologies and field work can greatly add to the identification of wetlands in a variety of ecosystems. Topics to be addressed include: Wetland characteristics and indicators; Imagery of wetlands; Field work and wetland features; Interpretation of imagery; Multispectral and hyperspectral imaging; Detailed moderate and fine spatial and spectral resolution sensing and analyses; Thematic mapping of wetlands; use of geographic information systems and modeling; and other topics of interest. Ample question and answer periods allow the attendees insight on their own issues and applications.

WS 4
Hyperspectral Remote Sensing Data Processing: Background and Approaches

William Farrand, *Farr View Consulting*
7:45 AM to 12:15 PM, CEU 0.4, Room: Potomac Ballroom II

INTRODUCTORY WORKSHOP

Imaging spectrometry, commonly referred to as hyperspectral remote sensing, provides high-resolution spectral information for environmental, natural resources, and urban characterization projects. In this workshop, students will be provided with an introduction to hyperspectral data, a review of the phenomenology of reflectance and emission spectroscopy, and a discussion of hyperspectral sensors and data types. The main emphasis will be on providing background on the processing approaches that can be applied to hyperspectral data. This review of processing approaches will include a discussion of pre-processing and atmospheric correction approaches. In terms of data analysis, methods that will be described include endmember determination approaches, spectral mixture analysis, spectral matching approaches, and covariance-based processors. In addressing the topic of hyperspectral data processing, a key factor is its basis in reflectance spectrometry. This basis will be discussed in the context of why some materials are more amenable to mapping than others. Commercially available data processing packages that are available for processing hyperspectral and multispectral data will be discussed as well as a discussion of the processing approaches within those packages. Certain processing techniques are better suited to certain applications and the reasons for this are addressed.

I will provide a package of materials to the students that will include hard copies of the material presented and an extensive list of references on the topics addressed. An in-class exercise will be given if time allows.

WS 6
Analysis and Application of Polarimetric Synthetic Aperture Radar (SAR) Data

Yong Wang, *East Carolina University*
7:45 AM to 12:15 PM, CEU 0.4, Room: Potomac Ballroom I

INTERMEDIATE WORKSHOP

Since the successful launch of SeaSat SAR of USA into space in 1978, a new era of acquiring and analyzing spaceborne imaging SAR data began. Then there were/are other successfully launched spaceborne USA and non-US SARs that have collected data globally. Today, there are many successful studies in which SAR data are used as the primary data sources. The studies include the global/national landuse and land cover, national land survey, agriculture, forestry, fishery, resource exploitation, environmental protection and monitoring, disaster prevention and mitigation, and national security.

This is a shortened and revised version of a previously developed workshop given at the ASPRS 2010 meeting in San Diego, California with a focus on the analysis and application of polarimetric SAR data. Also, since the San Diego workshop, revision and updating to the workshop materials have been made to address the issues raised by the attendees. Recent research activities related to the analysis of NASA/JPL/UAVSAR polarimetric data will be added through the demonstration using public domain software. Finally, public-domain free SAR data analysis software (s/w) will be provided to the attendees and demonstration to use the s/w will be given.

Remote Sensing and GIS Discussion Group

Monday, November 14, 2011, 5:00 PM until 7:00 PM
Room: Red Fox

Join remote sensing and GIS industry leaders for a pre-conference meeting and reception at Pecora 18, Monday, November 14, 2011 in the Red Fox room, located on the third level of the Hilton Washington Dulles Hotel, from 5:00pm - 7:00pm.

Keynoting the meeting are representatives from NASA's Jet Propulsion Lab (JPL). They will discuss the benefits of integrating remote sensing and GIS to measure snowmelt, an important aspect of the annual water cycle.

Following the presentation, the audience will be invited to participate in one of two breakout discussions on topics pertinent to the Remote Sensing and GIS communities.

Afterwards, network with your peers at an Esri-sponsored reception from 6:15pm - 7:00pm

WS 7
Advanced Hyperspectral Sensing of the Terrestrial Environment

Prasad Thenkabail, *U.S. Geological Survey*
Dean Riley, *Aerospace Corporation*
John Lyon, *U.S. Environmental Protection Agency*
12:45 PM to 5:15 PM, 0.4 CEU, Room: Potomac Ballroom II

ADVANCED WORKSHOP

Hyperspectral sensing has created a wealth of opportunity to understand our changing world. It is now incumbent to focus on applications and best methods to derive true productivity. The instructors will share their deep knowledge on important economic themes of the terrestrial environment domestically and internationally. The issues of vegetation, croplands, geological and mineral exploration, and coastal/wetland applications hold great import in our growing and increasingly commodity driven world. These applications derive needed information and power decision-making through current paradigms of sustainability, Food and Water Security, nation building through resource management, coastal and marine spatial planning, and so forth. Attendees should have some knowledge and bring their own applications questions for attention during and at the end of the Workshop.

WS 8
Object Oriented Image Classification: From Feature Extraction to Land Cover Mapping

Kass Green, *Kass Green and Associates*
Russell G. Congalton, *University of New Hampshire*
12:45 PM to 5:15 PM, .4 CEU, Room: Potomac Ballroom I

INTRODUCTORY WORKSHOP

This workshop introduces attendees to object oriented image classification. Unlike per pixel classifiers which rely only on the spectral characteristics of a feature, object oriented classifiers are capable of utilizing all feature characteristics including color, tone, texture, shape, height, and context. While powerful in the classification of moderate resolution data (e.g. Landsat), object oriented classification is pivotal for using high resolution (e.g. NAIP and commercial satellite imagery), because of the imagery's mixture of shadow and illuminated features, and the need to group pixels together to map land use land classes (e.g. a suburb or a forest) instead of individual features such as single trees. With the recent explosion in availability of high resolution imagery, knowledge of object oriented image classification is critical to map users and producers alike.

Workshop participants currently using object oriented classification are encouraged to discuss their projects and be prepared for a lively discussion on the pros and cons of different approaches.

ASPRS Committee Meetings

ASPRS Board Meeting
8:00 AM to 5:00 PM, Room: Potomac Ballroom III

Board Members only breakfast and lunch served in Mosby Room, Lower Level

Student Advisory Council
5:45 PM to 6:45 PM, Room: Potomac Ballroom III

Continuing Education Credits (CEU's)

ASPRS is pleased to announce that Continuing Education Units (CEUs) are awarded for the ASPRS workshops. This program is being offered in conjunction with George Mason University.

The Continuing Education Unit (CEU) is a nationally recognized unit of measurement for participation in non-credit continuing education programs.

Adults who successfully complete George Mason University's approved programs will be awarded continuing education units. A permanent record of CEUs awarded will be maintained in the university database and will be easily accessible for certification and verification purposes.

The objective of the CEU is to:

- Provide a nationally established record of professional development learning activity

- Encourage adult students to utilize educational resources to meet their personal and educational needs

- Recognize individuals who continue their education and keep themselves current in their chosen professions

- Enable individuals to have an accurate source of their current CEU activity

- Provide a system to document continuing education experiences in meeting certification requirements.

George Mason University, Office of Continuing Professional Education is registered with the National Association of State Boards of Accountancy (NASBA), as a sponsor of continuing professional education on the National Registry of CPE Sponsors. State boards of accountancy have final authority on the acceptance of individual courses for CPE credit.

IMAGING AND GEOSPATIAL TECHNOLOGIES – INTO THE FUTURE

ASPRS ANNUAL CONFERENCE
March 19–23, 2012
Sacramento Convention Center
Sacramento, California
www.asprs.org/Annual-Conferences/Sacramento-2012

MAPPS

Management Association for Private Photogrammetric Surveyors
An Association of Photogrammetry, Mapping, and Geospatial Firms ®

- Interact with leaders of top geospatial firms as well as key personnel from major Federal agencies.
- Listen to presentations by decision makers from Federal agencies about policy issues affecting private geospatial firms.
- Participate in roundtable discussions between agency officials and geospatial professionals.

Invited agencies include: NGA, USDA, USGS, DHS, FEMA, TSA, FAA, NOAA, DoD and USACE.

The MAPPS Fall Policy Conference is for MAPPS members only and requires a separate registration fee from the ASPRS/Pecora Symposium.

Fall Policy Conference
Thursday, November 17, 2011
Sponsored by **Merrick & Company**

12:00 p.m.—1:00 p.m. Registration
(On-Site Registration Available - $215)

1:00 p.m.— 4:00 p.m.
General Session & Liaison Meetings

Potomac Ballroom I & II

Attention MAPPS Members:
5th Annual MAPPS Geospatial Products and Services Excellence Awards Reception

Sponsored by **T3 Global Strategies, Inc.**

Tuesday, November 15, 2011
7:00 p.m.— 9:00 p.m.
Red Fox Room
Invitations have been sent to all MAPPS members

Classified Session

The National Geospatial-Intelligence Agency (NGA) will be hosting an all-day classified session on November 14, 2011 in order to engage attendees in exploring views, ideas, approaches, and research results in areas that are of interest to the GEOINT community.

Areas of possible interest include but are not limited to:

- Integrating video, infrared, laser, radar, and spectral sources to meet intelligence/operational challenges.
- Integrating the human dimension of the operational environment and activity-based geospatial intelligence and observations to determine and anticipate activities and intent.
- GEOINT Visual analytics: Data visualization and analysis of GEOINT data and activities.
- Geospatial narrative: developing narrative of normal activity, patterns of life and identifying abnormal activity.

Afternoon Session

NGA is soliciting topics for in-depth round table research discussions in the afternoon sessions that address key challenges and potential solutions on important Activity-Based GEOINT issues and problems. Selection of topics will be based on significance of the problem(s) being addressed, creative problem formulations, state-of-the-art and practices elucidations, innovative ideas, ingenious approaches, and imaginative research or application alternatives. Topics should focus on problems for which Activity-Based GEOINT can make a difference to Anticipatory Intelligence Analysis; why it is important to the intelligence and operational community; who is involved; and, the key issues addressed. The goal of the deep-dive session is to offer solutions and innovative approaches to Activity-Based GEOINT that address the type of sensor or data needed to tackle the problem.

Advanced registration is required. On-site registrations will not be accepted.

Materials Needed: Please remember to bring a photo ID for entrance to the session.

Schedule for November 14th

Registration and Continental Breakfast (provided) –
7:00 AM to 8:00 AM

Morning Session –
8:00 AM to 12:00 PM

Lunch (Provided) –
12:00 PM to 1:30 PM

Afternoon Session –
1:30 PM to 4:30 PM

Location:
The SI Organization
15036 Conference Center Dr.
Chantilly, VA 20151

Transportation:
Transportation will be provided. Buses will load at 6:30 am outside of the Belmont Ballroom Foyer at the Hilton Washington Dulles Hotel and will return to the Hotel at the conclusion of the session.

Students & Young Professionals

Please join the Student Advisory Council (SAC) for some activities designed just for YOU!

Student and Employer "Meet and Greet"

5:45 PM to 6:15 PM, Room: Potomac Ballroom II

All Students attending the Symposium are invited. The meet and greet is designed to connect members looking to apply for jobs in the digital mapping industry with employers looking to hire. Bring your resume, a business card, or just a smile and a handshake, and expand your job network at the symposium.

Student Advisory Council Meeting

Monday, November 14, 6:15 PM to 6:45 PM, Room: Potomac Ballroom II

After the Student and Employer "Meet and Greet", stay and participate in the Student Advisory Council Meeting. Meet the members of the Council and hear about the activities they have planned for this meeting and throughout the year.

Opening General Session 1

8:30 AM to 10:00 AM, Room: Potomac Ballroom

Welcome

Tom Holm, Pecora 18 Steering Committee Chair, *U.S. Geological Survey*

Achieving William Pecora's Vision

Moderator: Matt Larsen, *U.S. Geological Survey*

Dr. Pecora was a motivating force behind the launch of Earth Resources Technology Satellite-1 (renamed Landsat 1) and the establishment of a program for civil remote sensing of the Earth from space that we know today as the Landsat satellite program. Pecora 18 celebrates Pecora's vision with the theme "Forty Years of Earth Observations: Understanding a Changing World." The symposium focuses on how 40 years of Landsat and other Earth observation missions have influenced our understanding of the changing Earth and contributed to improving information needed for managing our natural resources. Special emphasis will be given to the current state of the Landsat program such as the free data revolution and the upcoming launch of the Landsat Data Continuity Mission. Lessons from the past and present serve as the foundation for looking toward the next generation of operational land remote sensing. William Pecora called for ongoing civilian remote sensing capabilities focused on improving natural resources management. His vision requires continued growth and innovation in Earth observation programs and capabilities.

DOI History — The Past and Future of Landsat

Lori Caramanian, Deputy Assistant Secretary for Water and Science, *Department of the Interior*

Lori Caramanian is one of two deputies to the Assistant Secretary for Water and Science, which oversees the United States Geological Survey and Bureau of Reclamation. Prior to that, Caramanian served as Counselor to the Assistant Secretary for Water and Science, focusing on policies and background regarding domestic and international water supply issues, the National Environmental Policy Act, Endangered Species Act, U.S. Geological Survey issues, and Bureau of Reclamation operations. Before joining the Department of the Interior, Caramanian served as a trial attorney with the U.S. Department of Justice, Environment and Natural Resources Division, representing the United States in litigation involving federal land, natural resources, ecosystem management, and cultural issues.

NASA History — The Past and Future of Landsat

Michael Freilich, *National Aeronautics and Space Administration*

Michael H. Freilich is the Director of the Earth Science Division in the Science Mission Directorate at NASA Headquarters. Prior to coming to NASA, he was a Professor and Associate Dean in the College of Oceanic and Atmospheric Sciences at Oregon State University. He received BS degrees in Physics (Honors) and Chemistry from Haverford College in 1975 and a PhD in Oceanography from Scripps Institution of Oceanography (Univ. of CA., San Diego) in 1982. From 1983-1991 he was a Member of the Technical Staff at the Jet Propulsion Laboratory. Dr. Freilich's research focuses on the determination, validation, and geophysical analysis of ocean surface wind velocity measured by satellite-borne microwave radar and radiometer instruments. He has developed scatterometer and altimeter wind model functions, as well as innovative validation techniques for accurately quantifying the accuracy of spaceborne environmental measurements.

The Importance of Landsat to the Nation and World

Senator John Thune (invited), R-South Dakota

2011 Pecora Award Presentations

The William T. Pecora Award is presented annually to individuals or groups that make outstanding contributions toward understanding the Earth by means of remote sensing. The award is sponsored jointly by the Department of the Interior (DOI) and the National Aeronautics and Space Administration (NASA).

Canada Centre for Remote Sensing (CCRS)

The Canada Centre for Remote Sensing (CCRS) has contributed greatly to the understanding of the Earth over a period of forty years through the development of important technologies and innovative applications. Through pivotal leadership in numerous international, remote-sensing organizations and hands-on collaborations, CCRS scientists and engineers have transferred their cutting edge technology to industry, and have promoted the concept of a global system of remote sensing, ground station technology, and data applications worldwide. CCRS' experience, productivity, and efficiency have made them a model for remote-sensing programs around the world.

Alan H. Strahler

Dr. Alan H. Strahler, Professor of Geography and Environment at Boston University, is a pioneer in quantitative environmental remote sensing. After receiving his PhD in Geography from The Johns Hopkins University in 1969, he focused his biogeography expertise on improving fundamental understanding of the remote sensing process and its applications to characterizing land surface properties. His professional career, now in its 43rd year, reflects contributions that have significantly advanced the analytical and theoretical foundation for remote sensing science and applications.

Refreshment Break

Ball Aerospace & Technologies Corp.

10:00 AM to 10:30 AM, Location: Exhibit Hall, Belmont Ballroom

Exhibit Hall Opens

10:00 AM to 7:00 PM, Location: Belmont Ballroom

All posters are also on display in the Exhibit Hall.

Technical Sessions 1-6
10:30 AM to 12:00 Noon

TS 1
The National Land Cover Database: Two Decades of Developing Land Cover Data for the Nation
Moderator: Collin Homer, *U.S. Geological Survey*
Room: Tarara, Lower Level

National Land Cover Database
Collin Homer, *U.S. Geological Survey*

Joyce Fry, William Acevedo, and L. Yang

Land Cover Change Analysis Results between 2001 and 2006 for the Conterminous United States
Joyce Fry, *U.S. Geological Survey*

NLCD 2011: A New Generation of Land Cover Characterization and Monitoring
Limin Yang, *SGT Technologies*, contractor to the *U.S. Geological Survey*

Suming Jin, Collin Homer, Patrick Danielson, Joyce Fry, and George Xian

National Assessment of Land Cover Change Using the NLCD 1992-2006 Database
William Acevedo, *U.S. Geological Survey*

TS 2
Remote Sensing Applications to Agriculture
Moderator: Prasad Thenkabail, *U.S. Geological Survey*
Room: Veritas, Lower Level

Using Disaster Meteorological Constellation to Improve Agricultural Landcover Classification in Cropland Data
Audra Zakzeski, *U.S. Department of Agriculture — National Agricultural Statistics Service*

Using Deimos-1 & UK-DMC2 to Monitor US Crop Condition During the 2011 Crop Season
Drew Hopwood, *Astrium GEO-Information Services*

Mapping Cropland Irrigation in Kansas
Dana Peterson, *Kansas Applied Remote Sensing/Kansas Biological Survey*

Stephen Egbert, Chris Brown, and Kevin Dobbs

Satellite Irrigation Management Support with the Terrestrial Observation and Prediction System
Lee Johnson, *Ames Research Center*

TS 3
Water Resources Applications of Remote Sensing
Moderator: Marvin Bauer, *University of Minnesota*
Room: Sully, Main Level

Remote Sensing for Monitoring Water Quality
Maruthi Sridhar, *Bowling Green State University*

Balaji Bhaskar, Robert K. Vincent, and Jerry Wicks

Comparison and Evaluation of Medium to Low Resolution Satellite Imagery for Regional Lake Water Quality
Marvin E. Bauer, *University of Minnesota*

Leif Olmanson and Patrick L. Brezonik

Investigating the Potential of the Operational Land Imager (OLI) for Monitoring Case II Waters Using a Look-Up-Table Approach
Nima Pahlevan, *Rochester Institute of Technology*

John R. Schott

Surface Water Trends Derived from Landsat MSS, TM, and ETM+
Jennifer Rover, *U.S. Geological Survey*

Lei Ji, Bruce K. Wylie, Larry L. Tieszen, and Jessica L. Rodriguez

TS 4 — Special Session
Applications of Earth Observing Data for Environmental and Human Health

Moderators: Amy Budge, *University of New Mexico, Earth Data Analysis Center;* Sue Estes, *NASA*
Room: Piedmont I & II

Environmental conditions on the Earth's surface and in its atmosphere have a tremendous effect on human health and well-being. To better understand these effects health providers and researchers are exploring resources and data provided by Earth observing satellites and sensors to develop tools for monitoring diseases. Though the field of geospatial health remains in its infancy, there is a need for collaboration between multi-disciplinary research groups to provide research results to the health communities of practice. Satellite remote sensing of the environment offers a unique vantage point that can help fill in gaps left by more traditional methods of tracking diseases. The session aims to educate and stimulate the audience's thinking about applications of Earth observations for monitoring environmental conditions that affect human health. Discussions will include descriptions of NASA sensors in use and those in the future that could apply to human and environmental health issues. Other topics will include the state of knowledge for emerging, re-emerging, and under-reported diseases, as well as pandemic threats and applications of Earth observing data for coping with these diseases. Implications for health within the Global Change Science Strategy will be discussed.

NASA Satellite Observations for Climate Research and Applications for Public Health
J. A. Haynes, *NASA*

Sue M. Estes

Environmental Information Use and Tools for Health Information Systems: Infectious, Emerging and Re-emerging Diseases
Pietro Ceccato, *IRI Columbia University*

Monitoring and Mapping Conditions Associated with Rift Valley Fever Outbreaks in Southern Africa: 1998-2011
Assaf Anyamba, *NASA*

Kenneth J. Linthicum, Jennifer L. Small, Kathrine M. Collins, Compton J. Tucker, Edwin W. Pak, and Seth C. Britch

TS 5
Land Cover Change
Moderator: Randy Wynne, *Virginia Tech*
Room: Chrysalis, Lower Level

War and Agriculture: Three Decades of Cropland Land Cover Change in Iraq
Glen Gibson, *Virginia Tech*

James Campbell, Randy Wynne, Ken Stiles, and Carl Zipper

Time-Series-Based Change Detection Using Free Landsat: The National Urban Change Indicator (NUCI)
Jon Dykstra, *MDA Information Systems, Inc.*

Michael Finn and Roger Mitchell

Landsat Time Series Application: The Columbia Glacier, Canada - 1985 to 2010
Paul Baumann, *State University of New York, Oneonta*

Identifying Surface Coal Mines and Assessing Woody Canopy Recovery using Interannual Landsat Data
Susmita Sen, *Virginia Tech*

Randolph H. Wynne and Carl E. Zipper

TS 6 — Special Session
NGA — Working with Remote Sensor Data and Video
Moderator: James L. Kindig, *NGA Academic Research Office Video Analysis*
Room: Mosby, 3rd Floor

Lidar Data Compression
Ye Duan, *University of Missouri*

Geolocation of Handheld Video
Hakjae Kim, *University of Florida*

HSI Data Dimension Reduction and Classification
Wojtek Czaja, *University of Maryland*

Accuracy Standards Working Group
12:00 Noon to 1:30 PM, Room: Veritas, Lower Level

General Session 2

1:30 PM to 3:00 PM, Room: Potomac Ballroom

Highlights from the Past Four Decades

Moderator: Stanley Morain, *University of New Mexico*

There have been many remarkable achievements in land remote sensing over the past four decades. Speakers/panelists will reflect on the science highlights, surprises, key achievements, and challenges associated with 40 years of Earth Observation. This session consists of 10-minute presentations and then questions and dialog with the audience.

Building the Landsat Mission in the 1970s

John De Noyer, *U.S. Geological Survey* retired

John De Noyer received a Ph.D. from the University of California-Berkeley in 1958, then went on to teach geophysics and geology at the University of Michigan and served as Acting Head of the Acoustics & Seismics Lab at Willow Run Labs-U of M. While there, he also worked at the Institute for Defense Analyses as a consultant to the Nuclear Test Detection Program (NTDP) in ARPA/Office of the Secretary of Defense, as Deputy Director of NTDP.

Next, he served as Assistant Director for Research at the U.S. Geological Survey (USGS), where one of many projects was planning for the ERTS Satellite (later renamed Landsat). This led to service as Director of the Earth Observations Programs at NASA HQ. After ERTS was successfully launched, De Noyer returned to USGS as Director of the EROS program when the EROS Data Center was established and user applications of Landsat data were being developed. After seven years directing the EROS Program he was assigned as a Research Geophysicist in USGS, to work on advanced methods of interpreting gravity and magnetic data.

The Technological Advances in Earth Imaging of the Middle-Landsat Era

Vince Salomonson, *NASA* retired, *University of Utah*

Vincent V. Salomonson is a Research Professor with joint appointments in the Departments of Atmospheric Sciences and Geography at the University of Utah. He is also a Senior Scientist (Emeritus) in the Earth Sciences Division at the Goddard Space Flight Center of NASA. Prior to being Senior Scientist he served as the Director of the Earth Sciences Directorate at the Goddard Space Flight Center, NASA, Science Team Leader for the NASA Earth Observing System (EOS) facility instrument called the Moderate Resolution Imaging Spectrometer (MODIS), and Project Scientist for Landsat 4 and 5. Salmonson also served as the Deputy Director for Earth Sciences in the Space and Earth Sciences Directorate, Chief of the Laboratory for Terrestrial Physics, head of the Hydrospheric Sciences Branch, and as a research meteorologist.

Emergence of Landsat as an Essential Global Change Observation

Compton Tucker, *NASA*

Compton Tucker received a BS degree in biological science in 1969 from Colorado State University in Ft. Collins, MS in 1973, and PhD in 1975, both from the College of Forestry. In 1975 he came to the NASA/Goddard Space Flight Center as a National Academy of Sciences post-doctoral fellow and in 1977 became an employee of NASA. He contributed to the band selection on the Thematic Mapper and has used NOAA AVHRR, MODIS, SPOT Vegetation, and Landsat satellite data for studying deforestation, habitat fragmentation, desert boundary determination, ecologically-coupled diseases, terrestrial primary production, glacier extent, and how climate affects global vegetation.

Perspectives on Scientific Achievements and Trends as Viewed Through his Experiences as *Remote Sensing of Environment* Editor

Marvin Bauer, *University of Minnesota*

Marvin Bauer is professor of Remote Sensing at the University of Minnesota. His research and teaching focuses on applications of remote sensing to monitor land, vegetation, and water resources. He is a fellow of the American Society of Photogrammetry and Remote Sensing and has received the William T. Pecora Award, NASA Distinguished Public Service Medal, ASPRS SAIC Estes Memorial Teaching Award, and Minnesota GIS/LIS Consortium Lifetime Achievement Award. He also serves as editor-in-chief of *Remote Sensing of Environment* journal.

Reflections on Forty Years of Earth Observation

Alan Strahler, *Boston University*

Alan Strahler, Professor of Geography at Boston University, has been actively involved in remote sensing research since 1978. He is best known for leading the development of the Land Cover and BRDF/Albedo products of the MODIS instrument and for his work in geometric-optical models of forest canopy reflectance. More recently, he has collaborated with CSIRO to explore applications of the Echidna ground-based lidar for retrieving forest structure in both Australia and the United States. His work has been honored with the DSHC degree from the Catholic University of Louvain, Belgium; the SAIC Estes Memorial Teaching Award of the ASPRS; and the Medal for Outstanding Contributions to Remote Sensing, Remote Sensing Science Group, AAG. He is also a Fellow of the American Association for the Advancement of Science.

Refreshment Break

3:00 PM to 3:30 PM, Exhibit Hall, Belmont Ballroom

Ball **Ball Aerospace & Technologies Corp.**

Technical Sessions 7-12
3:30 PM to 5:00 PM

TS 7
New Insights into Disturbance and Recovery Processes Gleaned from Dense Time-series Landsat Data

Moderator: Robert Kennedy, *Oregon State University*
Room: Veritas, Lower Level

Mapping Cause of Disturbance in Boreal Forests using the Spectral-temporal Properties of Landsat

Todd Schroeder, *U.S. Department of Agriculture — Forest Service*

Michael Wulder, Sean Healey, and Gretchen Moisen

TimeSync: A Visualization Tool for Interpreting Landsat Time-series

Warren B. Cohen, *U.S. Department of Agriculture — Forest Service*

Zhiqiang Yang, Kevin Briggs, Susmita Sen, Stephen Stehman, Peder Nelson, Justin Braaten, and Robert E. Kennedy

Using Landsat-derived Disturbance History to Predict Forest Structure

Dirk Pflugmacher, *Oregon State University*

Warren, Cohen, Robert, Kennedy, and Zhiqiang, Yang

Life and Death on the Land: New Analytical Approaches Capture Landsat's Unique View of Evolving Landscapes

Robert Kennedy, *Oregon State University*

Zhiqiang Yang, Warren Cohen, Justin Braaten, Dirk Pflugmacher, Peder Nelson, Garrett Meigs, and Eric Pfaff

TS 8 — Special Session
Indicators of Human Settlements

(Sponsored by the ASPRS Remote Sensing Application Division)
Moderator: Karen Owen, *George Mason University*
Room: Sully, Main Level

Urban Growth in Campinas, Brazil, Estimated Using Landsat Imagery

M. Gregory Hammann, *GeoEye Inc. / George Mason University*

Settlement Indicators of Wellbeing And Economic Status – Lacunarity And Vegetation

Karen Owen, *George Mason University*

Massively Parallelized Pathfinding to Reconstruct Ancient Transportation Networks

Devin White, *Crow Canyon Archaeological Center*

Sarah Barber

Using Image Fusion and Classification to Understand Human Demographics: A Study in the Rural Region of Eastern India

Roberto Canavosio-Zuzelski, *George Mason University*

Population Distribution Using a Nested, Multi-resolution Imagery Methodology in a Range of Developing World Environments

Derek Azar, *U.S. Census Bureau*

TS 9
Data Democracy — Making Data Available to Under-served Communities

Moderator: Eric Wood, *U.S. Geological Survey*
Room: Piedmont I & II

The Role of USGS in the CEOS Effort to Promote Data Democracy

Eric Wood, *U.S. Geological Survey*

The ASTER Global Digital Elevation Model: Case Study for the Group on Earth Observations Data Sharing Task Force

Dave Meyer, *U.S. Geological Survey*

Famine Early Warning — Data Delivery and Data Analyses Tools

Jim Rowland, *U.S. Geological Survey*

LandsatLook Imagery for Conservation, Education and an Open Society

Gene Fosnight, *U.S. Geological Survey*

TS 10
Landsat's Legacy and History

Moderator: Darrel Williams, *GST, Inc*
Room: Tarara, Lower Level

Landsat's Long History: Captured Stories

Laura Rocchio, *Science Systems and Applications, Inc.*

Terry Arvidson, Darrel Williams, Sam Goward, and Jim Irons

Post World War II Technology Harvest: The Landsat Observatory (1950-1972)

Samuel Goward, *Department Geography, University of Maryland*

Taking Flight, Bouncing Around: Landsat Earth Observation (1972-1992)

Laura Rocchio, *Science Systems and Applications, Inc.*

Making a Public Good Publicly Accessible: Landsat Earth Observation (1992-2009)

Terry Arvidson, *Lockheed Martin/NASA Goddard*

Landsat: Building a Strong Future

Tom Loveland, *U.S. Geological Survey*

John Dwyer

TS 11
Landsat Investigations and Comparisons

Moderator: Kevin Gallo, *NOAA*
Room: Chrysalis, Lower Level

Landsat Data Continuity Mission and Sentinel-2 Multi-Spectral Instrument Image Product Simulations for Sensor

Mary Pagnutti, *Innovative Imaging and Research*

Robert Ryan and Kara Holekamp

Landsat 5 Partnership in Alaska — Low-cost Academic-Government Joint Program

Tom Heinrichs, *University of Alaska Fairbanks*

Larry Ledlow and Grant Mah

Comparison of Landsat Surface Reflectance-based NDVI with *in situ* Data for Potential Validation of the GOES-R NDVI

Kevin Gallo, *NOAA/NESDIS*

Tilden Meyers

Developing a Shrub Canopy Cover Product for NLCD Across the Conterminous United States: Prototype Design and Implementation

George Xian, *ARTS* contractor to the *U.S. Geological Survey*

Collin, Homer, Debbie Meyer, Brain Granneman, and Jon Dewitz

TS 12 — Special Session
NGA — Sensor Data Processing and Analysis

Moderator: Joan R. Vallancewhitacre, *NGA Academic Research Office Projection Analysis*
Room: Mosby, 3rd Floor

Data Fusion and Remote Sensing for Human Event Activity

Andrea L. Bertozzi, *UCLA*

Reconstructions for SAR

Jian Li, *University of Florida*

Sensor/Surface Error Analysis

Charles Toth, *Ohio State*

Exhibitors' Reception

5:30 pm to 7:00 pm,
Exhibit Hall, Belmont Ballroom

Take this wonderful opportunity to visit with the national and international suppliers exhibiting at the Pecora 18 Symposium. An ASPRS Conference tradition, the Exhibitors' Reception is a perfect time to mingle with fellow attendees and thank the Conference Exhibitors, our hosts for the evening. The evening is sure to provide a relaxed environment with light hors d'oeuvres and beverages and a time to come together with old and new friends.

Admission to this event is included with most registrations.

Tuesday, November 15th, 5:30 PM to 7:00 PM

Poster Sessions

5:30 pm to 7:00 pm, Location: Exhibit Hall, Belmont Ballroom

Take this time to view the various posters on display and speak with the presenter. Poster Presenters are asked to be near their work at this time and available to answer questions and expand on their research. Posters will be on display throughout the conference and open for viewing.

Developing Wetlands Correction Factors for a Lidar-derived "Bare Earth" Digital Elevation Model
Sandra Fox, *St. Johns River Water Management District*

Palmer Kinser, Lawrence Keenan, William Wise, Clay Montague, and Debra Hydorn

Comparing the Phenological Curves of the Similarly Named Informational Classes in Different Classifications
Ioannis Kokkinidis, *Virginia Polytechnic Institute and State University (Virginia Tech)*

Evan Brooks

Making Use of the Landsat Archive in Undergraduate Geography Education
Matthew Ramspott, *Department of Geography, Frostburg State University*

Peter Lostritto, Matthew Bowling, Orren Whiddon, and Ethan Leonard

Multi-temporal Snow Cover Mapping in Mountainous Terrain using Landsat Remote Sensing
Christopher Crawford, *NASA's Earth and Space Science Program/Department of Geography*

Steve Manson and Marvin Bauer

Assessment of Geological Phenomena Occurrence in Mexicali Valley, Mexico, after the Cucapah Earthquake (April 4, 2010) using Envisat/Asar Interferometric Pairs and Spot Multispectral
Jorge Lira, *Instituto de Geofisica - Universidad Nacional Autónoma de México,* México

Ramiro Rodriguez

Historical Trends and Processes of Change in Forest Environments Revealed with Time Series of Landsat Images
Cristina Gomez, *Sustainable Forest Management Research Institute*

Michael Wulder, Joanne White, Fernando Montes, and Jose Delgado

Assessing Bridge Condition Using Remote Sensing
Colin Brooks, *Michigan Technological University*

Tess Ahlborn, Devin Harris, Larry Sutter, Bob Shuchman, Joe Burns, Arthur Endsley, Khatereh Vaghefi, Chris Roussi, Rick Dobson, and Ryan Hoensheid

Arctic Remote Sensing with Unmanned Aerial Systems — A NASA Project for IPY
Susan Schoenung, *NASA Ames Research Center/Bay Area Environmental Research*

Randal Albertson

Radiative Forcing Over the Conterminous United States Due to Contemporary Land Cover Land Use Change, and Sensitivity to Snow and Inter-Annual Albedo Variability
Christopher Barnes, *SGT, Inc.,* contractor to the *U.S. Geological Survey*

David Roy

Vegetation Regeneration Assessment after Landslides Caused by a Seismic Event using Free Landsat Data
Alvaro Burgos, Lecturer in Remote Sensing and GIS

Spectroscopic Remote Sensing for Material Identification and Mapping
Raymond Kokaly, *U.S. Geological Survey*

Trends in Land Use and Land Cover Change for the Conterminous United States: 1973-2000
Kristi Sayler, *U.S. Geological Survey*

Determining the Utility and Adaptability of Remote Sensing in Assessing Midwestern Reservoir Eutrophication and Turbidity
Mark Jakubauskas, *Kansas Biological Survey*

Donald Huggins, Debra Baker, Paul Liechti, and Jerry deNoyelles

Acoustic Remote Sensing of Total Phosphorus in Reservoir Bottom Sediments
Mark Jakubauskas, *Kansas Biological Survey*

Donald Huggins, Jerry deNoyelles, Edward Martinko, and Ryan Callihan

Platform Trajectory Solutions in DGPS Challenged Environments
JN (Nikki) Markiel, *NGA*

James Earwood

Global Ecosystem Anomalies during the 2010-2011 ENSO Cold Event
Kathrine Collins, *NASA Goddard Space Flight Center*

Assaf Anyamba

Quality Control Procedures for Digital Orthophotographs
Yaron Felus, *Survey of Israel*, Israel

Moshe Benhamu and Eran Keinan

Coastal Wetland Mapping and Monitoring Using Time Series SAR Imagery and Lidar: Alligator River National Wildlife Refuge, North Carolina
Thomas Allen, *East Carolina University*

Yong Wang, John Swords, Doug Newcomb, and Brent Gore

War and Agriculture: Three Decades of Cropland Land Cover Change in Iraq
Glen Gibson, *Department of Geography; Virginia Tech*

James Campbell, Randy Wynne, Ken Stiles, and Carl Zipper

William Pecora's Vision: A Historical Review of Past Pecora Symposiums
John Faundeen, *U.S. Geological Survey*

Thomas Holm

Unsupervised Change Detection of Satellite Imagery using Natural Grouping Based Markov Random Fields
Surender Varma Gadhiraju, *Centre of Studies in Resources Engineering; Indian Institute of Technology Bombay,* India

Economic Losses in Mississippi Caused by Disruptions in Transportation System: An Enhanced Simulation Combining Geospatial, Freight and Census Data Analysis
Rodrigo Nobrega, *Geosystems Research Institute, Mississippi State University*

Bethany Stich

Lidar Applications for Catastrophic Modeling
Kathleen Crawford, *Sanborn Map Company*

James K. Laffey

Definition of an Alarm System to Assess the Obsolescence of African Spatial Data Infrastructures
Thierry Rousselin, *Géo212*, France

Karine Guérin and Nicolas Saporiti

Reduction of Stripes and Noise in High-resolution Hyperspectral Image Using Adaptive Wavelet Filtering and Maximum Noise Fraction Transform
Amr Abd-Elrahman, *University of Florida*

Roshan Pande-chhetri

Synchronized Exploration and Production of Coal Bed Methane with Oil and Natural Gas by the Application of Remote Sensing
Subhasis Kesh, *University of Petroleum and Energy Studies Dehradun, India*

Using Landsat 7 Imagery to Create a Cloud-Free Hawaiian Islands Mosaic
Eric Augenstein, *Earthstar Geographics LLC*

Integrating Image and GIS processing to map the complex landscape of the Natchez Trace Parkway with National Vegetation Classification Protocols
Amina Rangoonwala, *Five Rivers Services, LLC* at *U.S. Geological Survey, National Wetlands Research Center*

Terri Bannister and Elijah Ramsey III

General Session 3

8:30 AM to 10:00 AM, Room: Potomac Ballroom

Science and Applications in an Era of Free Landsat Data

Moderator: Tom Loveland, *U.S. Geological Survey*

The 2008 decision to provide all data in the USGS Landsat archive available over the web at no cost created a revolution in using those data. This session will focus on the science and applications revolution resulting from the changes in the Landsat Data Policy. Speakers will showcase the advances in analytical approaches, especially time series and broad area assessments, new scientific and operational applications made possible by eliminating cost barriers for accessing data, and by advancements in computing and data processing technologies.

Implementing the Free Data Policy

Keynote Speaker

Bryant Cramer, *U.S. Geological Survey* retired, *GST, Inc.*

Bryant Cramer retired in 2010 after 40 years of Federal service and is presently a consultant with the Global Science & Technology Corporation. Prior to retiring, Cramer was the USGS Associate Director for Geography in Reston, Virginia and was responsible for the collection, processing, distribution, and archiving of practically all of the remotely sensed visible, lidar, and radar data at the USGS including the Landsat 5 and Landsat 7 missions as well as for the development of the ground segment for the Landsat Data Continuity Mission. Cramer joined USGS after spending 30 years at NASA in various positions including Deputy Director of Earth Sciences at NASA Headquarters, a long-time Program Manager at the Goddard Space Flight Center, and head of the Systems Engineering Office of the Space Station Program.

Panelists

Opportunities in Commercial Forestry

Randy Wynne, *Virginia Tech*

Randolph H. Wynne is a Professor in the Forest Resources and Environmental Conservation Department at Virginia Tech. He also serves as Remote Sensing Team Leader for the Forest Productivity Cooperative, Associate Director of the Conservation Management Institute, and Co-Director of the Center for Environmental Applications of Remote Sensing. Dr. Wynne's research interests are in the applications of remote sensing to forestry, natural resource management, ecology, ecosystem services, and earth system science.

Monitoring the Agricultural Landscape

Rick Mueller, *USDA National Agricultural Statistical Service*

Rick Mueller is Head of the USDA/National Agricultural Statistics Service/Spatial Analysis Research Section in Fairfax, Virginia. His unit produces geospatial statistical mapping and remote sensing data products for public dissemination. His group has successfully established geospatial program solutions for the display of statistical information; built GIS mapping tools for statistical analysis; and integrated remote sensing area and yield spatial analysis into NASS' operational estimation programs.

ChangeMatters – Allowing Anyone in the World to Freely Access Landsat Epoch Data and Monitor Change Worldwide

Kass Green, *Kass Green & Associates*

Kass Green is the President of Kass Green & Associates (KGA), a firm she founded in 2003 to consult on remote sensing and GIS technology and policy issues to private, educational, and public organizations. Ms. Green's experience includes over twenty five years of managing and supervising GIS and remote sensing professionals, as well as leadership in GIS and remote sensing research. Ms Green's current assignments include the development of esri's ChangeMatters web site, support to the Bill & Melinda Gates Foundation on remote sensing technology, and vegetation mapping of several National Parks.

Refreshment Break

10:00 AM to 10:30 AM, Exhibit Hall, Belmont Ballroom

Ball Ball Aerospace & Technologies Corp.

Exhibit Hall Opens

10:00 AM to 5:00 PM, Belmont Ballroom

All posters will be on display in the Exhibit Hall.

Poster Session

10:00 AM to 5:00 PM, Location: Exhibit Hall, Belmont Ballroom

Technical Sessions 13-18

10:30 AM to 12:00 Noon

TS 13
Landsat Calibration

Moderator: John Schott, *Rochester Institute of Technology*
Room: Veritas, Lower Level

Radiometric Calibration of the Landsat Reflective Bands — Lessons Learned with an Eye for the Future
Dennis Helder, *South Dakota State University*

Brian Markham and Kurt Thome

Continued Radiometric Characterization of the Landsat Thematic Mappers
Esad Micijevic, *SGT Inc.*, contractor to the *U.S. Geological Survey EROS Center*

Julia Barsi and Obaidul Haque

Re-discovering the Landsat Multispectral Scanner
Rajagopalan Rengarajan, *U.S. Geological Survey*

Dan Steinwand, Joshua Mann, Michael J. Choate, Lowell D. Johnson, Esad Micijevic, Obaidul Haque, Sadhana Karki, and Eugene A. Fosnight

Landsat Thermal Calibration: History and Status
John R. Schott, *Rochester Institute of Technology*
Simon J. Hook, Julia A. Barsi, Brian L. Markham, Jonathan Miller, Francis P. Padula, and Nina G. Raqueno

TS 14 — Special Session
Advanced High Resolution Satellite Synthetic Aperture Radar (SAR) Systems

(Sponsored by the ASPRS Primary Data Acquisition Division and Remote Sensing Data Applications Division)
Moderator: Bruce Davis, *Department of Homeland Security*
Room: Mosby, 3rd Floor

Advanced Synthetic Aperture Radar (SAR) systems such as COSMO-SkyMed, RADARSAT-2, TerraSAR-X and Tandem-X are revolutionizing remote sensing applications. Applications of these systems include topographic mapping; 2D and 3D, infrastructure stability, change detection, land cover and land use mapping, defense and security applications, rapid emergency response, and environmental monitoring. As more radar systems are brought on line and new tools created to extract useful information from the signal resulting from these sensors new and innovative applications will be developed to solve critical problems facing land use planners, environmental managers, and emergency response agencies. This session will feature presentations from these areas to highlight the current uses as well as future potential for this class of remote sensing technology.

TS 15
Methods and Data Fusion

Moderator: Bruce Cook, *NASA Goddard*
Room: Tarara, Lower Level

A Knowledge-based Automated Cropland Classification Algorithm (ACCA) Using Fusion of Landsat, MODIS, Secondary, and *in situ* Data
Prasad Thenkabail, *U.S. Geological Survey*

Zhouting Wu

A Data Fusion Approach for Estimating Forest Properties from Landsat and Sparse Lidar Data
Bruce Cook, *NASA Goddard Space Flight Center*

Jim Tilton and Paul Montesano

Evaluation of Multiple-domain Imagery Matching based on Different Feature Spaces
Hui Ju, *Center for Mapping at the Ohio State University*

Charles K. Toth and Dorota A. Grejner-Brzezinska

Daily MODIS Data Trends of Hurricane-Induced Forest Impact and Early Recovery
Elijah Ramsey III, *U.S. Geological Survey*

TS 16
Vision for a National Landscape Change Monitoring System

Moderator: Jeff Eidenshink, *U.S. Geological Survey*
Room: Chrysalis, Lower Level

National Landscape Change Monitoring: A Coordinated, Remote Sensing-based System for Mapping and Monitoring Land Cover and Land Use Change in the United States

Sean Healey, *U.S. Department of Agriculture Forest Service*

Brian Schwind, C. Kenneth Brewer, Jeff Eidenshink, and Matthew Rollins

A Project for Monitoring Trends in Burn Severity

Jeff Eidenshink, *U.S. Geological Survey*

Analysis and Trends in Coastal Land Cover Change from the Coastal Change Analysis Program

John McCombs, *NOAA Coastal Services Center*

Nate Herold

Landscape Change Monitoring with the National Land Cover Database

Collin Homer, *U.S. Geological Survey*

TS 17
Landsat Data Continuity Mission (LDCM) Overview

Moderator: Jim Irons, *NASA*
Room: Sully, Main Level

The Landsat Data Continuity Mission and its Satellite Observatory

James Irons, *NASA Goddard Space Flight Center*

William Anselm

LDCM Ground System Overview

James Nelson, *U.S. Geological Survey*

Jason Williams and Chris Engebretson

LDCM Data Processing and Archive System (DPAS) Overview

Chris Engebretson, *U.S. Geological Survey*

Science Data Products from the Landsat Data Continuity Mission and the Historical Landsat Archive

John Dwyer, *U.S. Geological Survey*

Tom Loveland

TS 18 — Special Session
Quality of Earth Observation Satellite Data

(Sponsored by the ASPRS Primary Data Acquisition Division)
Moderator: Mike Benson, *U.S. Geological Survey*
Room: Piedmont I & II

The synergistic use of remote sensing data will provide the baseline for addressing change and how the changes impact our society. Data may be derived from a variety of sources (satellite, airborne and in situ) at all scales — global, regional and local — through the coordinated resources and efforts of many systems. In order to use data to addresses earth observation change parameters, users and processors of data and derived products must be able to assess the data suitability for their particular application and the "fitness for purpose" of the data. This session discusses some of the current programs and processes being implemented to address data quality. The processes include geometric, spatial, and radiometric assessment and examples of work performed in the field, and discussion of data and information quality needs.

CEOS Quality Assurance Processes

Greg Stensaas, *U.S. Geological Survey*

The Importance of Spatial Quality

Mary Pagnutti, *I2R Corp.*

2010 CEOS Field Reflectance Intercomparisons

Kurt Thome, *NASA*

Data and Information Quality

Greg Leptoukh, *NASA*

General Session 4

1:30 PM to 3:00 PM, Room: Potomac Ballroom

Mapping and Monitoring the Globe

Moderator: Tom Loveland, *U.S. Geological Survey*

The 40-year Landsat legacy consisting of data covering the globe since 1972 created unique opportunities for understanding global change and the condition of the planet. This session will explore progress, current successes, and policy and technical challenges required to improve science and applications for mapping and monitoring our planet.

Global Land Cover Mapping

Matthew Hansen, *University of Maryland, College Park*

Matt Hansen is a professor in the University of Maryland Department of Geography and works on quantifying global land cover and its change over time. His research has evolved from coarse resolution prototyping of global land cover characterization using AVHRR data to the development of the standard MODIS Vegetation Continuous Fields products to global, regional and national forest cover change assessments that integrate MODIS and Landsat data. Currently, he is working on developing global land cover and change characterizations using Landsat data.

Benefits for International Global Studies

Alan Belward, *European Commission, Joint Research Centre*

Alan Belward works at the European Commission's Joint Research Centre in Italy where he is Head of the Global Environment Monitoring Unit – a research team providing information for European policies dealing with climate change, natural resource management and development-aid. In the 1990s he co-chaired the International Geosphere Biosphere Program's Land Cover Working Group and chaired the Committee for Earth Observing Satellites (CEOS) Working Group on Calibration and Validation. From 2002 to 2006 he chaired the Global Climate Observing System's (GCOS) Terrestrial Panel and in 2009 he was appointed to the GCOS Steering Committee. He was a member of the NASA and USGS Landsat Data Continuity Mission Science Team from 2007 to 2011 and is currently part of the European Space Agency's Sentinel-2 Mission Advisory Group. He is also a visiting lecturer at the Technical University of Vienna where he teaches Environmental Technologies and International Affairs.

Global Monitoring — Opportunities and Challenges

Curtis Woodcock, *Boston University*

Curtis Woodcock is a professor of Geography and Environment at Boston University. He specializes in remote sensing, particularly monitoring of environmental change, forests and forest carbon, and land use change. He serves as Team Leader for the USGS-NASA Landsat Science Team as well as Co-Chair for the GOFC-GOLD Land Cover Implementation Team.

Refreshment Break

3:00 pm to 3:30 pm, Exhibit Hall, Belmont Ballroom

Ball **Ball Aerospace & Technologies Corp.**

Technical Sessions 19-24
3:30 PM to 5:00 PM

TS 19
Mapping Water and Soil Quality
Moderator: Robert Vincent, *Bowling Green State University*
Room: Veritas, Lower Level

Use of LANDSAT TM Pycocyanin Algorithm to Show Possibility of Similar World View 2 Algorithm
Louis Sanderson, *Blue Water Satellite, Inc.*

Robert K. Vincent and B.B.M. Sridhar

LANDSAT TM Monitoring of Total Phosphorous in Lakes as Related to Cyanobacterial Blooms
Robert K. Vincent, *Bowling Green State University, Department of Geology*

Louis Sanderson and B.B. Maruthi Sridhar

Application of Remote Sensing to Map the Soil Chemical Characteristics
Maruthi Sridhar Balaji Bhaskar, *Bowling Green State University*

Robert K. Vincent

IEEE "Water for the World" Project: Contribution to GEO Water
Prasad Thenkabail, *U.S. Geological Survey*

Thomas Freud Wiener and Jay Pearlman

TS 20
Vegetation Change and Monitoring
Moderator: Jennifer Rover, *U.S. Geological Survey*
Room: Piedmont I & II

Monitoring Gradual Ecosystem Change Using Landsat Time Series Data
Jim Vogelmann, *U.S. Geological Survey*

Status and Distribution of Mangrove Forest of the World Using Earth Observation
Chandra Giri, *U.S. Geological Survey*

Climate Variability using MODIS Data in Tropical Regions
Roberto Bonifaz, *Instituto de Geofisica, Universidad Nacional Autónoma de México,* México

Combining Wintertime Greenness Measurements with Conservation Land Use Management Data to Promote Adaptive Management of Farm Resources in the Chesapeake Bay Watershed
W. Dean Hively, *U.S. Geological Survey, Eastern Geographic Science Center*

Greg McCarty and Jason Keppler

TS 21
Emerging Technologies
Moderator: Robert Ryan, Innovative Imaging and Research
Room: Tarara, Lower Level

Extending the Operational Envelope of Aerial Electro-optical Imaging from Pre-sunrise to Post-sunset for Improved Emergency Response
Robert Ryan, *Innovative Imaging and Research*

Mary Pagnutti, Kara Holekamp, and Bruce Davis

Multi-Wavelength Airborne Laser Scanning
James Van Rens, *Riegl USA*

Airborne Infrared Thermography for Environmental and Facility Management of the Army National Guard Training
Qassim Abdullah, *Fugro EarthData*

Robert Reeder, Richard McClellan, and Ted Stanton

ETopoSat
Don Light, *Rochester Institute of Technology —*

TS 22
Global Land Survey – Landsat

Moderator: Rachel Headley, *U.S. Geological Survey*
Room: Sully, Main Level

Global Scene Selection for Landsat Data

Shannon Franks, *SGT, Inc./NASA GSFC*

Terry Arvidson, Jeffrey Masek, Rachel Headley, and John Gasch

Global Land Surveys Science: First Results

Jeff Masek, *NASA GSFC*

Chris Justice

Landsat Global Archive Consolidation

Rachel Headley, *U.S. Geological Survey*

Steven, Labahn, Brian, Sauer, Cory Van Batavia, Jayson Holter, Jerad Shaw, Steve Marthaler, Daniel Etrheim, Jon Beck, and Alan Engelbrecht

Landsat's Long-Term Acquisition Plan

Eugene Fosnight, *U.S. Geological Survey*

John Gasch and Terry Arvidson

TS 23
LDCM Operational Land Imager (OLI)

Moderator: Jim Irons, *NASA*
Room: Chrysalis, Lower Level

The Operational Land Imager: Overview, Design, and Performance

Edward Knight, *Ball Aerospace & Technologies Corp.*

Operational Land Imager Radiometric Calibration

Brian Markham, *NASA/GSFC*

Ron Morfitt, Brent Canova, and Geir Kvaran

Operational Land Imager Geometric Calibration

James Storey, *Stinger Ghaffarian Technologie*s, contractor to *U.S. Geological Survey*

Kenton Lee and Michael Choate

TS 24 — Special Session
Remote Sensing Data, Modeling Frameworks and Applications

Moderator: June Thormodsgard, *U.S. Geological Survey*
Room: Mosby, 3rd Floor

The USGS has the largest archive of land remote sensing data in the world. This includes an archive of Landsat imagery acquired since 1972, AVHRR data acquired since the early 1980's and MODIS from 2000 to the present; these data sources are both medium resolution (30m) and course resolution (250m to 1km) and are a valuable resource to regional, continental and global models. This session would introduce the attendees to current modeling frameworks and applications which use remote sensing data and provide a forum for discussion on how USGS, NASA and others can effectively bring these assets to the scientific modeling community.

The NASA Earth Exchange (NEX): An Innovative Collaboration Platform for the Earth Science Community

Cindy Schmidt, *Bay Area Environmental Resource Institute/NASA*

Ramakrishna Nemani, Andrew Michaelis, Forrest Melton, Petr Votava, and Cristina Milesi

NASA's Terrestrial Observation Platform System (TOPS)

Rama Nemani, *NASA*

Forrest Melton

Application of TOPS to Appalachian Trail

Glenn Holcomb, *U.S. Geological Survey*

NASA's Land Information System (LIS)

Christa Peters-Lidard, *NASA*

Application of LIS to Drought Monitoring

Jim Verdin, *U.S. Geological Survey*

Chris Funk

USGS General Ensemble Biogeochemical Modeling System (GEMS)

Shuguang Liu, *U.S. Geological Survey*

MAPPS Awards Reception
5:00 PM to 7:00 PM, Room: Red Fox, 3rd Floor

Thursday, November 17th
Poster Session
8:00 AM to 10:30 AM, Location: Exhibit Hall, Belmont Ballroom

Technical Sessions 25-30
8:30 AM to 10:00 AM

TS 25
NASA DEVELOP National Program
Moderator: Cindy Schmidt, *NASA Ames*
Room: Sully, Main Level

North Carolina Coastal Management: Satellite Monitoring of Coastal Wetland and Shoreline Changes in Pamlico and Albemarle Sounds, North Carolina
Nathanial Makar, *NASA*

Lauren Childs , Peter Johnson, Brendan McAndrew, and Bryan Glover

Measuring Reservoir Heights via Satellite Altimetry Products for Global Flood Modeling
Ronald Albright, *NASA DEVELOP National Program*

Lauren Kaiser, Sean Madsen, Frederick Policelli, and Dr. Michael Jasinksi

Satellites Assist in Analysis of Biofilms in San Francisco Bay
Alex Remar, *NASA Ames Research Center DEVELOP National Program*

Amber Kuss, Tyler Ketron, Alex Remar, Andrew Nguyen, Michelle Newcomer, and Dr. Joseph Skiles

Spaceborne Sensors Track Marine Debris Circulation in the Gulf of Mexico
Ross Reahard, *UNO*

Jason Jones, Lucas Lee, Ross Reahard, Blaise Pezold, Brandie Mitchell, and Joe Spruce

TS 26
Drought Monitoring
Moderator: Jess Brown, *U.S. Geological Survey*
Room: Veritas, Lower Level

Pastoralists: Cultural Responses to Climate Variations Potentially Contributing to Drought Conditions on the Horn of Africa
Russell F. Schimmer, *University of Connecticut*

Roland A. Geerken and Yancey A. Orr

Tracking Recent Drought Effects Across the Upper Colorado River Basin using the Vegetation Drought Response Index
Jesslyn Brown, *U.S. Geological Survey*

Danny Howard, Brad Stricherz, Brian Wardlow, Karin Callahan, and Chris Paulsen

Agricultural Drought Monitoring From Space Using Freely Available MODIS Data
Ali Levent Yagci, *Center for Spatial Information Science and Systems*

Liping Di, Meixia Deng, Weiguo Han, and Chunming Peng

Advanced Multispectral Sensor Requirements for Agricultural and Environmental Monitoring
Guy Serbin, *InuTeq, LLC*

E. Raymond Hunt Jr., Craig Daughtry, and Martha Anderson

TS 27
Lidar and Land Characterization
Moderator: Jason Stoker, *U.S. Geological Survey*
Room: Piedmont I & II

Status of the National Enhanced Elevation Assessment
Greg Snyder, *U.S. Geological Survey*

A National-scale Assessment of Lidar and Landsat TM Fusion for Improved Vegetation Characterization
Jason Stoker, *U.S. Geological Survey*

Object Based Image Analysis (OBIA) for Decadal Landscape Change in the Kisumu, Kenya Region
L. Monika Moskal, *University of Washington*

M. D. Dunbar and M. Halabisky

The Importance of Landsat Data in High Resolution Image Classification
Kass Green, *Kass Green & Associates*

Mark Tukman

www.asprs.org/Pecora18

TS 28 — Special Session
New Satellites and Technologies
(Sponsored by the ASPRS Remote Sensing Applications and Primary Data Acquisition Divisions)
Moderator: John Iiames, *Enviromental Protection Agency*
Room: Mosby, 3rd Floor

In the world of Earth observation satellites, this decade will provide the highest number of systems on orbit. This session is designed to cover recent satellite technologies and their capabilities from moderate to high resolution systems in the large through small satellite classes. This session will focus on visible and infrared technology but will also cover some other new technology areas being used.

Panelists:
Brad Doorn, *NASA* — NASA Satellites
Paul Stephens, *DMC* — Small Satellites
Gregory L. Stensaas, *U.S. Geological Survey* — International Satellites
Todd Johanesen, *NGA* — High Resolution Satellites

TS 29
LDCM's Thermal Infrared Sensor (TIRS)
Moderator: Dennis Reuter, *NASA*
Room: Tarara, Lower Level

The Thermal Infrared Sensor (TIRS) on the Landsat Data Continuity Mission
Dennis Reuter, *NASA/Goddard Space Flight Center*

James Irons, Murzy Jhabvala, Fernando Pellerano, Cathleen Richardson, Kurtis Thome

The Preflight Calibration of the Thermal Infrared Sensor (TIRS) on the Landsat Data Continuity Mission
Ramsey Smith, *NASA Goddard Space Flight Center*

Dennis Reuter, James Irons, Allen Lunsford, Matthew Montanero, Zelalem Tesfaye, Brian Wenny, and Kurtis Thome

In-flight Calibration of the Thermal Infrared Sensor (TIRS) on the Landsat Data Continuity Mission
Kurtis Thome, *NASA/Goddard Space Flight Center*

Dennis Reuter, Matthew Montanaro, Simon Hook, and Brian Markham

Image Quality Predictions through the Use of Data-Driven Simulations for the Landsat Data Continuity Mission
Matthew Montanaro, *Sigma Space Corp./ NASA Goddard Space Flight*

Aaron Gerace, Dennis Reuter, and John Schott

TS 30
Mapping Vegetation Anomalies
Moderator: E. Raymond Hunt, *U.S. Department of Agriculture-ARS*
Room: Chrysalis, Lower Level

Dynamics of Invasive Leafy Spurge in Northeastern Wyoming Using the Landsat Data Record
E. Raymond Hunt, *U.S. Department of Agriculture-ARS*

Detection of Early Season Invasive Plant Species on the Colorado Plateau
Raymond Kokaly, *U.S. Geological Survey*

Mark Miller, Jered Hansen, and Terence Arundel

Hyperspectral Remote Sensing of Vegetation: Knowledge Gain and Knowledge Gap after 40 Years of Research
Prasad Thenkabail, *U.S. Geological Survey*

John G. Lyon and Alfredo Huete

Remote Sensing of Environmental Disturbance
Terrence Slonecker, *U.S. Geological Survey*

Gary Fisher, Lesley Milheim, Coral Roig-Silva, and Cindy Thatcher

Refreshment Break
10:00 am to 10:30 am, Belmont Ballroom Foyer

Ball Aerospace & Technologies Corp.

Closing General Session 5

10:30 AM to 12:00 Noon, Room: Potomac Ballroom

The Next Forty Years

Moderator: Mike Wulder, *Canadian Forest Service*

The future of land remote sensing and the continuation of Pecora's vision are the focus of the final session. Speakers will explore the needs for improved education and training, advancing policies and investments, scientific research, and other Earth observation infrastructure. Special emphasis will be given to the next generation of land remote sensing with prominent young remote sensing scientists and applications specialists giving their vision for the future.

Panelists

Mike Wulder, *Canadian Forest Service*

Mike Wulder received his B.Sc. degree from the University of Calgary (1995), and his M.E.S. (1996) and PhD (1998) degrees from the Faculty of Environmental Studies at the University of Waterloo. Wulder joined the Canadian Forest Service, Pacific Forestry Centre, in Victoria, British Columbia as a Research Scientist in 1998. His research is focused on using remotely sensed and spatial data to support forest monitoring and reporting activities over a range of scales and data types, chiefly including lidar and optical satellite data. Wulder is an adjunct professor in the Department of Geography at the University of Victoria and the Department of Forest Resources Management of the University of British Columbia.

Sean Healey, *U.S. Department of Agriculture, Forest Service*

Sean P. Healey is a Research Ecologist at the Rocky Mountain Research Station of the US Forest Service. He is working with the National Forest System on a system to identify the effects of management and disturbance upon forest carbon storage. He is the Forest Service science lead for the inter-agency Landscape Change Monitoring System and is a member of NASA's Carbon Monitoring System Science Development Team.

Jeff Masek, *NASA*

Jeff Masek is a Research Scientist in the Biospheric Sciences Branch at NASA GSFC. His research interests include mapping land-cover change in temperate environments, application of advanced computing to remote sensing, and satellite remote sensing techniques. Dr. Masek has held previous positions at University of Maryland, Hughes Information Systems, and Cornell University. At University of Maryland, he acted as project manager for the REALM Image Database system, which pioneered automated, large-area land-cover analyses through parallel processing of Landsat data, and was also Deputy Team Leader for the Landsat Science Team. At Hughes Information System, he managed the collaborative prototyping program for the EOSDIS Core System (ECS) project, which sought out and funded innovative earth science information prototypes from the academic community. Dr. Masek received a BA in Geology from Haverford College (1989) and a PhD in Geological Sciences from Cornell University (1994).

Lola Fatoyinbo, *NASA*

Lola Fatoyinbo is a Research Physical Scientist at NASA Goddard Space Flight Center. Her research interests include mapping of vegetation 3 dimensional structure from radar and lidar data, mapping of land cover and land use change in tropical wetland ecosystems and new instrument development and applications. Dr Fatoyinbo previously worked at the Caltech Jet Propulsion Laboratory, the university of Florida and the University of Virginia. At JPL, she worked primarily on continental scale mapping of mangrove forest distribution and canopy height form spaceborne SAR and Lidar data. At the University of Florida, she was responsible for high resolution mapping of salt marsh species encroachment. She received her PhD in Environmental Sciences with a focus on forest ecology and remote sensing in 2008.

Landsat Data Products Roundtable

1:00 PM to 5:00 PM, Room: Piedmont I & II

Users are invited to share their experiences and recommendations regarding standard and higher-level Landsat data products. An overview of the status and plans for these products will be presented, followed by an open discussion regarding fitness for community use in terms of product content, quality, usability, accessibility, and overall value. Users are encouraged to bring presentation materials to support any findings or recommendations they would like to contribute to the community for discussion.

Panelists:

John Dwyer, *U.S. Geological Survey*
Gene Fosnight, *U.S. Geological Survey*
Tom Maiersperger, *SGT, contactor to USGS EROS Center*

MAPPS Fall Policy Conference

Registration
12:00 Noon to 1:00 PM, Room: Potomac Ballroom

Registration for the MAPPS Fall Policy Conference is separate from the Pecora 18 Symposium. Please register with MAPPS for admission to these sessions and events.

General Session
1:00 PM to 2:00 PM, Room: Potomac Ballroom

Federal Agency Liaison Meetings
2:15 PM to 3:45 PM, Room: Various, see MAPPS Registration Desk

Wrap Up & Reception
3:45 PM to 6:00 PM, Room: Potomac Ballroom

Exhibit Hall Floor Plan

MAIN ENTRANCE

100	101	200	201	300	301	400		
102		202	203	302	303	402		
104	103						403	
106		204	205	304	305	404		
108	107	206	207	306		406	407	506
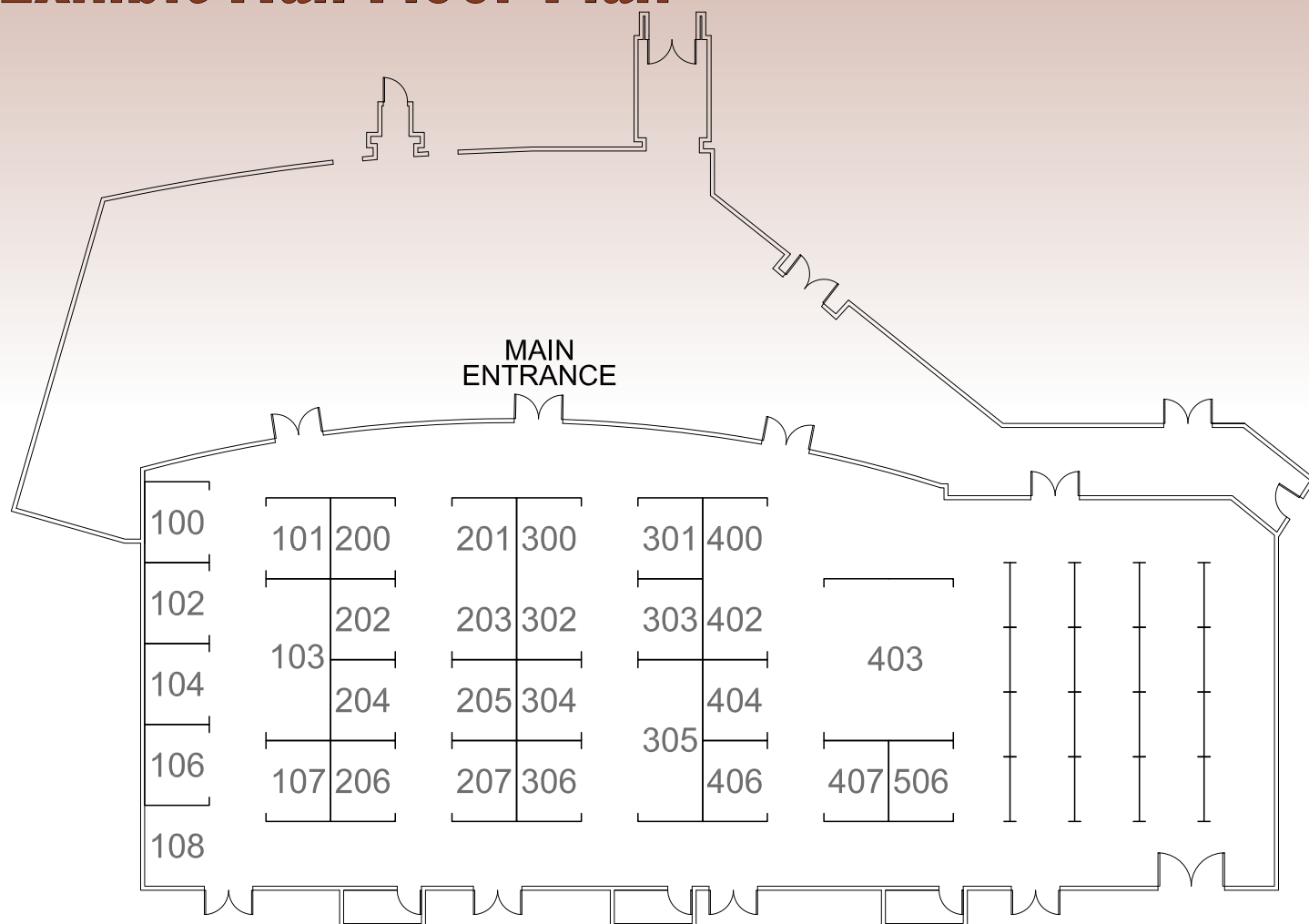
Exhibitor	Booth Number	Exhibitor	Booth Number
Applanix Corporation	303	Intergraph | ERDAS	200
ASD Inc	101	Leica Geosystems Inc.	202
American Society for Photogrammetry and Remote Sensing (ASPRS)	104	LizardTech	100
BAE Systems	300	NASA	305
Cardinal Systems, LLC	301	NGA	103
Dynamic Aviation	102	Optech	306
ERDAS	200	*POB*	506
Esri	201	*Professional Surveyor* Magazine	506
Exelis Visual Information Solutions	205	Riegl USA	400
Icaros Inc.	304	U.S. Geological Survey EROS Center	403
Imaging Notes Magazine	506	University of Mississippi GIS&T Graduate Certificate Program	204

Thank You for exhibiting and contributing to the success of this years' Symposium.
We hope you will join us in Sacramento at the 2012 ASPRS Annual Conference,
March 19 to 23, Sacramento, California
and at the ASPRS 2012 Fall Conference, October 29 to November 1, Tampa, Florida

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Exhibitor Descriptions

Applanix Corporation   Booth 303
85 Leek Crescent, Richmond Hill, ONT, Canada L4B 3B3
289-695-6000; 905-709-6027; www.applanix.com

Applanix, a Trimble Company, develops, manufactures, sells and supports advanced products and scalable solutions that maximize productivity through Mobile Mapping and Positioning. Whether it be precise position and orientation for mapping the seafloor, georeferencing of a lidar point cloud, real-time guidance of robotic vehicles, or a complete airborne mapping solution for generating directly georeferenced orthophotos, Applanix has what you need. Established in 1991, Applanix supports customers worldwide with exceptional service, anywhere at anytime.

ASD Inc   Booth 101
2555 55th Avenue, Boulder, CO 80301
303-444-6522; 303-444-6825 (fax); www.asdi.com

ASD Inc. is the global leader in remote sensing and hyperspectral measurement solutions, providing unparalleled ground truthing results. Our rugged, portable FieldSpec® line of analytical instruments provides the freedom to rapidly collect spectra in the field. Trusted by top research experts at thousands of universities and research institutions, ASD's full-range spectrometers are used in more than 70 countries across the world. For more information, please visit www.asdi.com.

BAE Systems   Booth 300

Cardinal Systems, LLC   Booth 301
701 N. Oceanshore Blvd., Flagler Beach, FL 32136-3309
386-439-2525; 386-439-0259 (fax); www.cardinalsystems.net

With a long and successful history of developing photogrammetric and mapping solutions, Cardinal provides the most efficient, pragmatic mapping tools available today. Offering the modules VrOne, VrTwo, VrLiDAR, VrOrtho, VrAirTrig, VrMosaic, VrBalance, VrAdjust, VrVolumes and VrLite we are continually developing fresh new programs for the geospatial community in which Vr is fast becoming the standard. To learn how to revolutionize your data collection and editing methods please visit us at Booth 301.

Dynamic Aviation   Booth 102
1402 Airport Road, P.O. Box 7, Bridgewater, VA 22812
540-828-6070; www.dynamicaviation.com

Dynamic Aviation specializes in providing turbine powered aircraft and aviation infrastructure to organizations with exacting data needs, but lacking aviation resources. We offer versatile, superior aerial platforms into which existing and emerging technologies can be installed to acquire data of all types. Our aerial platforms can be deployed to obtain lidar and multi/hyperspectral data. They may be used for aerial photography, geophysical survey, and air sampling; as well as for aerial and maritime surveillance.

ERDAS   Booth 200
5051 Peachtree Corners Circle, Suite 100, Norcross, GA 30092
770-776-3400; www.erdas.com

Esri   Booth 201
380 New York Street, Redlands, CA 92373
909-793-2853; 909-307-3102 (fax); www.esri.com/remotesensing

Esri's geographic information system (GIS) software gives you the power to think and plan geographically. It helps you collect, manage, analyze and visualize geographic information, including imagery and other remotely sensed data. GIS enables you to see relationships and trends in your data not visible in a chart. You can then solve problems and make better decisions because you are looking at your data in a way that is quickly understood and easily shared.

Exelis Visual Information Solutions   Booth 205
4990 Pearl East Circle, Boulder, CO 80301
303-786-9900; 303-786-9909; www.ittvis.com

Powerful software is critical when using imagery and data to solve problems. From hyperspectral and multispectral imagery to raw lidar point clouds and aerial photography, Exelis Visual Information Solutions has software solutions to help you get the most information from your imagery and data. Stop by our booth to see our newest software, E3De™, an interactive software environment that allows you to create photorealistic 3D visualizations and extract important 3D features and products from lidar.

Icaros Inc.   Booth 304
1445 Research Blvd., Suite 150, Rockville, MD 20850
301-220-4344; 301-220-4345; www.icaros.us

Icaros Inc. specializes in the design and development of advanced, photogrammetric solutions, integrating hardware and software systems for end-to-end spatial data collection, processing, analysis, and production. Icaros Multi sensor the IDM600 system and the IPS Photogrammetric suite are designed to answer the evolving needs of our changing market with a variety of mission and sector specific applications including, rapid "quick view" turnaround, ultra high resolution (1cm), Thermogrammetry, Thermal wide swath, 5 band collection and more.

Intergraph | ERDAS   Booth 200
5051 Peachtree Corners Circle, Norcross, GA 30092
770-776-3400; 770-776-3500 (fax); www.erdas.com

ERDAS and Intergraph leverage joint strengths to offer a complete portfolio of geospatial solutions. ERDAS' enterprise remote sensing and photogrammetry solutions help organizations harness the information of the changing earth for greater advantage. Intergraph solutions help businesses and governments organize data and infuse the world with intelligence, making processes and infrastructures better, safer and smarter.

ERDAS and Intergraph are subsidiaries of Hexagon AB, a leading global provider of precision measurement technology.

Exhibitor Descriptions

Leica Geosystems Inc.   Booth 202

5051 Peachtree Corners Circle, Norcross, GA 30092
800-367-9453; www.leica-geosystems.us

Following the acquisition of Intergraph by Hexagon in 2010, Hexagon Geosystems' newly formed Geospatial Solutions Division has brought together Leica Geosystems Airborne Sensors and Z/I Imaging. Committed to continued innovation on all major product lines, the combined airborne sensor portfolio includes the widest range of medium and large format imaging as well as lidar technologies and offers a choice of sensor for every application. A full suite of software from flight planning to post-processing provides end-to-end workflow for high accuracy orthophoto generation, feature extraction and map production. In addition, Hexagon Geosystems operates a global network of customer service and support centers to ensure highest productivity around the clock.

LizardTech   Booth 100

1008 Western Ave. #200, Seattle, WA 98104
206-652.5211; 206.652.0880 (fax); www.lizardtech.com

Since 1992, LizardTech® has delivered state-of-the-art software products for managing and distributing massive, high-resolution geospatial data such as aerial and satellite imagery and lidar data. LizardTech pioneered the MrSID® technology, a powerful wavelet-based image encoder, viewer, and file format. LizardTech has offices in Seattle, Denver, London and Tokyo and is a division of Celartem Technology Inc., (JASDAQ: 4330). For more information about LizardTech, visit www.lizardtech.com.

NASA   Booth 305

300 East Street, Washington, DC 20546
301-614-5560; 301-614-6530 (fax); www.nasa.gov

NASA Earth System Earth Science conducts and sponsors research, collects new observations from space, develops technologies and extends science and technology education to learners of all ages. Working closely with our global partners we enhance economic security in many tangible ways. NASA research seeks to answer fundamental science questions about the changes we see in climate, weather, and natural hazards, and deliver sound science that helps decision-makers make informed decisions.

National Geospatial-Intelligence Agency   Booth 103

7500 GEOINT Drive, Springfield, VA 20151
301-227-2439; Fax: 301-227-0117; www.nga.mil

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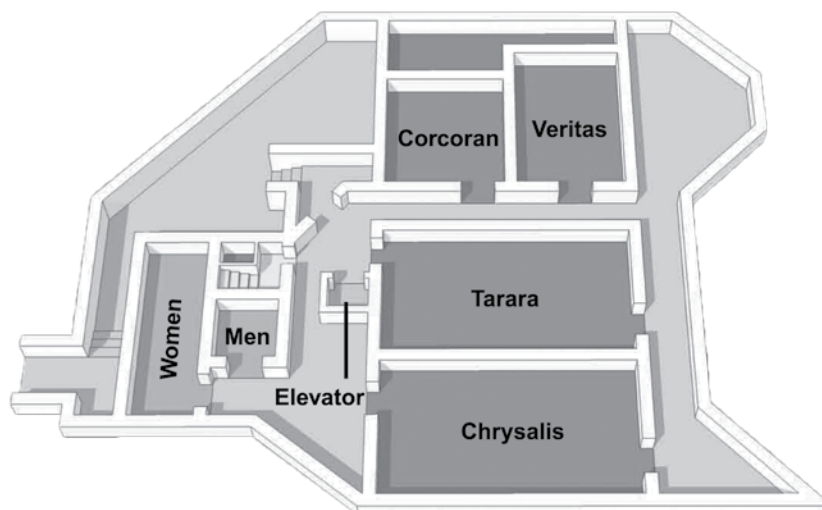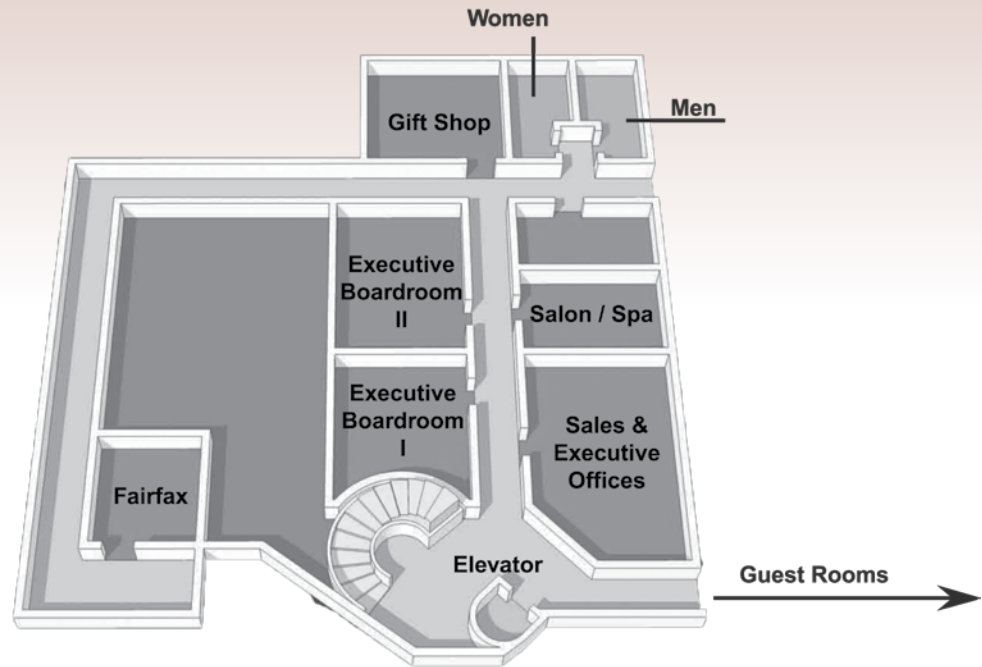
Main Level
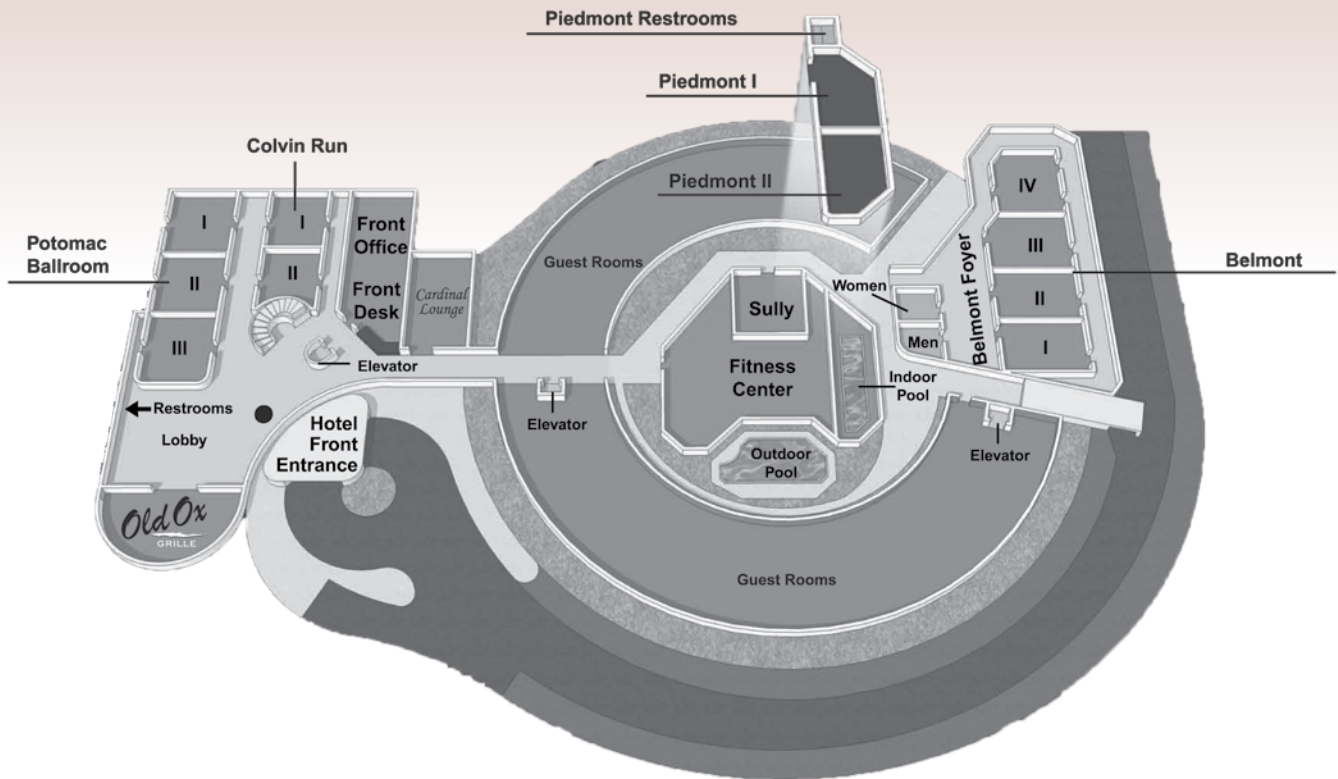
Lower Level

Hotel Floor Plan
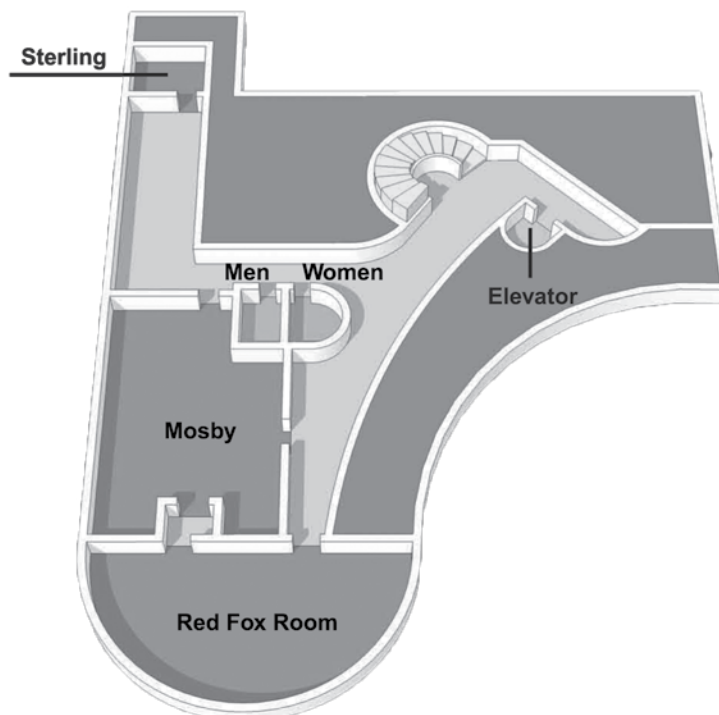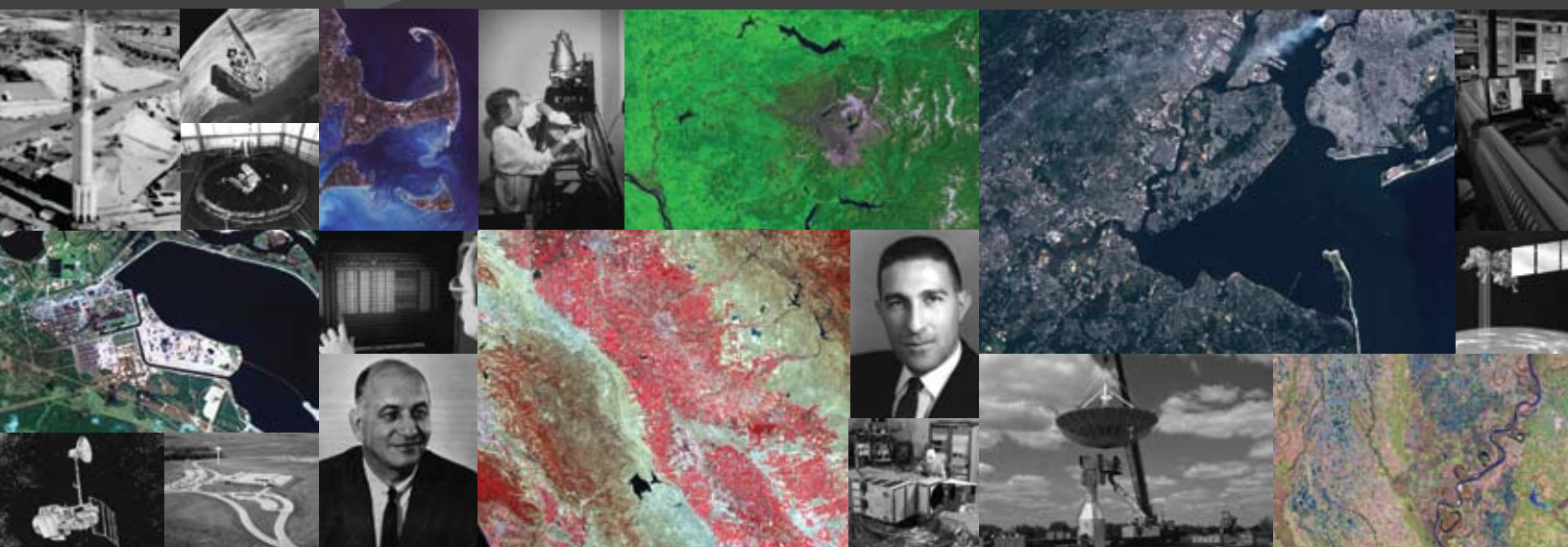
2nd Floor

3rd Floor

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